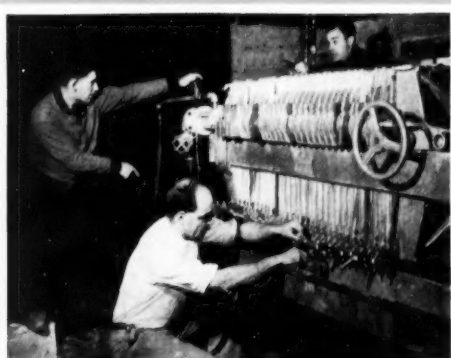


# Chemical Week

March 20, 1954

Price 35 cents



- Owners of young, ambitious firm strive to inch in on zirconium chemicals . . . . . p. 22

For the researcher: a raft of new tools to make him more efficient . . . . . p. 44



- Chlorophyll: denounced, debunked, deflated; but it's merely down, not out, hope the makers . . . . p. 74

Keep your eyes on semiconductor rectifiers; they're fomenting an electrochemical revolution . p. 97



- Wyandotte's Cremers warns managers: don't slash prices to soup up sales . . . . . p. 58



**YOUR SOURCE OF OIL-SOLUBLE**

# Sodium Sulfonates

**BOTH Refined and Pale OS GRADES**

SODIUM SULFONATES . . . once only by-products of petroleum processing . . . have become active components in a surprising variety of products. Today they are manufactured to close specifications.

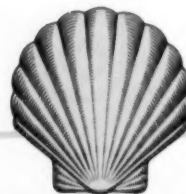
Shell Chemical Sodium Sulfonates improve the scourability of textile processing oils. In dry cleaning soaps, they provide an essential detergent action. In oils for metalworking, Sodium Sulfonates are emulsifying and anti-rust agents. For premium lubricating oils Sodium Sulfonates are extremely successful in making

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Shell Pale OS Sulfonates, except for their lighter color (ASTM Dil., color no. — 3½ max.), have the same specifications as Shell Sodium Sulfonates, Refined. Whichever specification you require, you will find Shell Chemical the dependable source. Write for Technical Bulletins *Sodium Sulfonates, Refined* (62%) and *Shell Pale OS Sulfonates*.

#### SALES SPECIFICATIONS

Equivalent Weight, Min. . . 450  
Inorganic Salts (as sodium sulfate), % w. Max. . . . 0.8  
Sulfonate Content (water-free basis), % w. Min. . . 62  
Water Content, % w. . . . 3.0-5.0



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# The Paint

that curbed corrosion in a cannery

PROTECTION PLUS easy maintenance for all the machinery and equipment in this cannery comes from paints carrying this mark—



Photo courtesy Lund & Sons—makers of "Tuff-Plex"

Corrosive fruit and vegetable acids raised havoc in this cannery. Many protective coatings were tried. They all failed in a matter of months. Then a paint based on **PLIOLITE S-5** was used. *No paint failure occurred in over two years!*

**PLIOLITE S-5** is a styrene-butadiene copolymer, designed for use in making paints which are easily applied by brush, spray or roller; dry rapidly; give a tough, adherent, high-gloss film that is

unaffected by a wide range of acids, alkalies, oils, greases and water.


Stop corrosion before it starts by asking your paint supplier for maintenance finishes made with **PLIOLITE S-5**. Be sure to include **PLIOLITE S-5** in your paint purchasing specifications. Or write for details and a directory of manufacturers to Goodyear, Chemical Division, Dept. O-9417-A, Akron 16, Ohio.

CHEMICAL  
**GOODYEAR**  
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March 20, 1954 • Chemical Week



# Solution

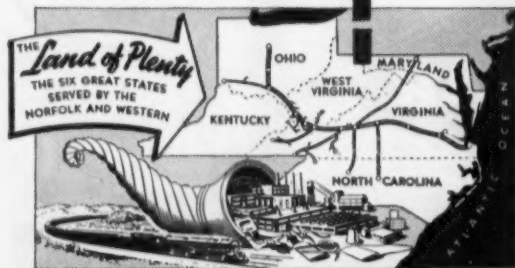
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YOUR TRAFFIC MANAGER is a specialist in transportation, which is a major factor in plant location. Consult him about good plant location.



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## RAILWAY

# Chemical Week—

Volume 74

March 20, 1954

Number 12

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March 20, 1954 • Chemical Week



## CORROSION RESISTANCE calls for QO FURFURYL ALCOHOL

Resins prepared from furfuryl alcohol are resistant to attack by acids, alkalis, and organic liquids. In addition, these resins have high heat resistance and low porosity. More and more industries are using furfuryl alcohol resins as the basis for mortars employed in the construction of floors, pickling tanks, sewers, smokestacks, digesters and reactors. Furfuryl alcohol based resins also serve as binders for glass fabric or asbestos reinforced pipe and duct, and in reinforced tanks and laboratory table tops.

If you have problems in which the answer is the use of a corrosion or chemical resistant material then investigate furfuryl alcohol and furfuryl alcohol resins. The Quaker Oats Company does not manufacture furfuryl alcohol resins but does supply furfuryl alcohol itself, and will be glad to refer you to the sources of supply for the resin. Write for a copy of Bulletin 205 which describes the chemical and physical properties as well as the use of this important chemical material.

## The Quaker Oats Company



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Also 6-oz. Size\*





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Also  
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No Top Seam, No Side Seam" construction provides surest product protection. Exclusive "Modern Design" commands the most attention, hence sells the most merchandise.

SPRA-TAINER is but one member of Crown's distinguished family of finest quality cans. Our complete line offers progressive packaging to the many and diverse products of American industry. May we tell you about it in person? Just call or write.

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DIVISION

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*One of America's Largest Can Manufacturers*

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## Tasty Medicines

TO THE EDITOR: Your news article "The Taste is the Thing" [which outlined the efforts being taken to flavor medicines for children] (Feb. 6) is especially interesting in view of the rapid changes taking place. . . .

I'm not too sure how well-controlled or how blind are some of taste tests being made, however. Thus our interest in standards.

One question: Could you tell me the origin of the quotation you cite: "He who frees childhood from that terror, nasty medicine, will be the benefactor of mankind." . . .

W. FRANKLIN DOVE  
Dept. of Public Health  
College of Medicine  
University of Illinois  
Chicago

*Some taste tests are well controlled, others border on the haphazard. (One pillmaker, to size up children's tastes, canvassed and consulted candy companies.)*

*The quotation is credited to a Chicago pediatrician, the late Bernard Fantus. Two other of his comments: "The struggle to make a sick child take medicine sometimes does more harm than the medicine does good."*

*"Insults to the sensitive palates of children are never forgiven or forgotten."—Ed.*

## Continuous Crystallizer

TO THE EDITOR: In view of the current interest in continuous fractional crystallization, such as the new Phillips installation for para-xylene recovery (Feb. 20), I feel that it might be of interest to announce the performance of the crystallizer in operation at Cornell.

. . . It eliminates completely the mechanical handling of any slurry or crystal-mass. All crystallization takes place within the column itself. Both feed and product streams are liquids. Cooling for crystal generation is by the direct injection of an immiscible liquid. Brine (calcium chloride, calcium nitrate, or other salt mixtures) is used as a high-density coolant,

which moves down through the column along with the crystals. . . .

Almost no crystals form on the brine drops but grow as free-falling crystals in the cool area around the brine . . . this compacts the crystal bed and reduces void space. . . . A much higher reflux is needed for purification when crystal compaction is entirely dependent on the small density difference between the crystals and their melt.

Melting at the bottom provides liquid both for reflux and washing the crystal bed and end product. Brine separates immediately and completely . . . as an immiscible phase . . . is recirculated through the coolers. Paradichlorobenzene of high purity is being produced in the present laboratory column from its mixture with the ortho isomer. . . .

The demonstrated success of this unit justifies an intensified investigation of such engineering data as optimum reflux, maximum capacities, use of intermediate brine recycle to reduce cooling costs. . . .

H. F. WIEGANDT  
Associate Professor  
College of Engineering  
Cornell University  
Ithaca, N.Y.

## It's Business

TO THE EDITOR: We have just read your news article "Engineers' Enigma" (Feb. 20) . . . It inspires us to send you the enclosed copy of a letter we have written to every member of the Senate and of the Assembly in the N. Y. State Legislature . . .

We should be appreciative if you would take editorial note of the reasons we give for the passage of the Carlino-Milmoe Bill . . .

D. J. WALSH, JR.  
Partner  
Sanderson & Porter  
New York

**Highlights:** "We, as a partnership, are in favor of this Bill [to eliminate the restrictions placed by the present law on the practice of engineering by corporations].

"The proposals of the committee are inherently and completely sensible and in the interest of the profession. Although at present a partnership, we would like the option of becoming a corporation . . . have that freedom of choice. It must not be forgotten that while engineering on the individual level is a profession, on the organization level it is a business.

"In engineering, as in any other

business, growth in size requires subdivision of labor and specialization in effort among the executives of the organization. . . . Finance, sales, personnel administration are not of a strictly engineering nature . . . require responsible attention. The stipulation in the present law that the chief executive of presently qualified corporations be a professional engineer is unrealistic.

"Moreover, problems of finance, etc., are best dealt with under the corporate form of organization . . . building up working capital, pension funds, etc.

"These features alone endanger the security of individual professional engineers who are either self-employed or work for partnerships . . .

"There's no question of the legality of our present partnership form of organization . . . but we would be prevented from adding to our staff men skilled in administration unless they chanced, too, to be professional engineers. . . . This is both ridiculous and dangerous . . . the only cure for which is the permissibility of incorporation . . .

"It is distinctly not in the interest of individual professional engineers to oppose the practice of engineering by corporations. Such opposition is misguided, shortsighted, unrealistic.

"The choice of form of organization should be free to engineers. The present law is unjustly discriminatory . . .

"There is nothing about the proposed amendment to the law . . . which would do other than increase the dignity of engineering as a profession. It would improve the conditions under which it would be carried on as a business.

"We are strongly in favor of the proposed amendment . . . hope you will give it your support in the legislature."

## Tell, Don't Sell

TO THE EDITOR: In your news article on the Chicago Technical Societies Council (Feb. 20) you state that the council members "feel that their unit is justified by" the work of the annual Chicago area career conference "in recruiting young people into scientific and engineering fields." . . .

The conferences are designed purely to furnish information to high school and junior college students about the many different occupational fields . . . The sixth annual conference, which will be held March 20, will consist of 32 panel sessions where a total of 100 different occupations

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to:  
W. A. Jordan, Chemical Week, 330  
W. 42nd St., New York 36, N. Y.

## OPINION. . . . .

will be discussed. fifteen of these will be in engineering or the sciences.

The sponsors of the conference believe that irreparable harm is done by encouraging students to prepare for a career for which they are not suited. Recruiting is strictly forbidden. If the representative of any field engages in recruiting, that field is denied participation the following year.

The Chicago area career conferences are unique. In no other city, to the best of our knowledge, is information on so large a group of occupations available at one time to all students in the area. . .

H. F. SCHWARZ

General Chairman

6th Annual Chicago Area Career Conference, Chicago.

### The Desiccant Story

TO THE EDITOR: . . . You certainly did an excellent job in presenting the story of the desiccant industry (*Feb. 13*) and what is going on in that field of endeavor. . . .

DON GLEASON

Manager

Desiccant Division

Culligan, Inc.

Northbrook, Ill.

### Spun-Dyed Fibers

TO THE EDITOR: . . . I found your discussion of spun-dyeing of textiles (*New Colors: In from the Spin, Feb. 13*) very good and most informative. . . .

I would add this thought, however: there are commercial limitations to spun-dyed fabrics. For example, there are several hundred shades of pink required for women's lingerie. Obviously, a situation of this sort militates against the use of spun-dyed fibers. . . .

J. H. DILLON

Director

Textile Research Institute

Princeton, N.J.

### Fluorine Pills

TO THE EDITOR: Felix J. Underwood, in his letter (*Feb. 20*) says that "not a single objection to the program of fluoridating water has withstood the test of scientific investigation." While most arguments against fluoridation have been unsound, this method leaves much to be desired from the standpoint of controlled dosage. . . .

To receive the optimum dose a child should drink four glasses of water daily containing 1 ppm. of fluorine. . . . Here is a possibility for wide variation in individual consumption. Fluoridated water also

varies . . . from 2.1 ppm. in one city to 0.44 in another. . . .

Children can receive caries-reducing benefits of fluorine by ingestion of tablets or other supplements. . . . The optimum daily fluorine dose can be readily supervised by doctor or dentist with the fluorine intake known and controlled. . . .

DAVID W. BRONSON

Bronson Laboratories

Sherman Oaks, Calif.

### Pinpointing Polyol

TO THE EDITOR: CW's (*Jan. 30*) estimate of sorbitol output (60 million lbs. for 1953) is, I am afraid, too flattering to pass without comment. . . . In spite of the unusually rapid acceptance of sorbitol, your figure still represents quite a stretch.

It is true that we could bring close to 70 million lbs. into the economy should the need arise. In the meantime, while we are doing our best to make honest men out of your crystal gazers, just don't let them set the output figures too far beyond our immediate reach. . . .

R. K. GOTTSHALL

President

Atlas Powder Co.

Wilmington, Del.

*Right enough. Sorbitol output figures are, naturally, rather closely held—and so are capacity figures. We're glad, however, that our estimate for 1952 output (in the same news article) of 50.5 million lbs. stands unchallenged. We're also appreciative of Reader Gottshall's "pretty close" confirmation of a previous CW capacity estimate (July 26, '52) of 75 million lbs.—ED.*

### Re—Decimal

TO THE EDITOR: In your table of Chemical Company Earnings (*CW, Mar. 6*) the pretax earnings of Nopco Chemical are shown as \$2,741,000 for 1953 and \$2,259,000 for 1952. The percent change, is shown as 2.1%; this obviously should be 21.3%, a figure of which we are quite proud and one which is equaled by only five of the other twenty-two firms listed. . . .

These results were obtained in spite of lower unit selling prices, and we expect to continue this underlying expansion of our business in 1954. . . .

MAURICE J. KELLY

Director, Industrial

Development Laboratory

Nopco Chemical Co., Inc.

Harrison, N. J.

*Sorry. We held our decimals in both net sales increase and net earnings, slipped on pretax earnings.—ED.*

# CHEMICALS

## AREN'T

Kennedy makes packages for chemicals with the flick of a wrist—or the click of a machine. Either hand-made or machine-made bags, case liners and drum liners are turned out by the thousands . . . hourly . . . to package the products of the chemical industry.

CARBON BLACK

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ARSENATES

CITRIC ACID

DYE STUFFS

## SO

Paper, plastic or foil . . . you name it, Kennedy has it . . . and can convert it into an engineered or conventional package for your chemical products.

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## TOUGH!

Our engineers are qualified through training and experience to deal with the special problems of chemical packaging. And our mile-long line of men and machines is your assurance of uniform quality at lowest possible cost.

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Send me more information regarding Kennedy packaging for chemical industry.



# Efficient General Electric gas turbine power plant reduces operating costs

**Utilizing exhaust-heat-recovery boiler, G-E unit can attain 70% thermal efficiency, provide up to 120,000 lbs/hr process steam**

Improved heat balance, elimination of separate boiler facilities, and a steam supply of up to 120,000 pounds per hour—with supplementary fuel firing—make the General Electric combustion gas turbine an efficient, economical prime mover for plants requiring considerable amounts of steam for process or other plant uses. Even without supplementary fuel firing, 40,000 pounds of steam per hour can be generated.

Well suited for either 5000 kw generator or 6700 hp mechanical drive for blowers and compressors, the G-E turbine offers these advantages:

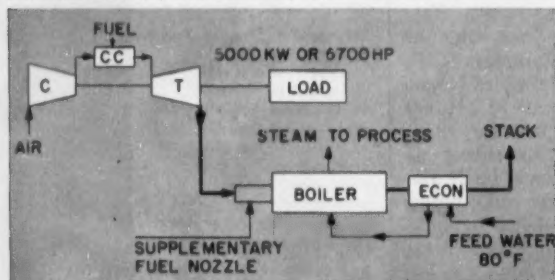
**Proven in actual service**, over 130,000 operating hours—equivalent to more than 15 years—have been accumulated by G-E gas turbines in industry.

**Simple building construction** is possible because the unit is small in size and weight.

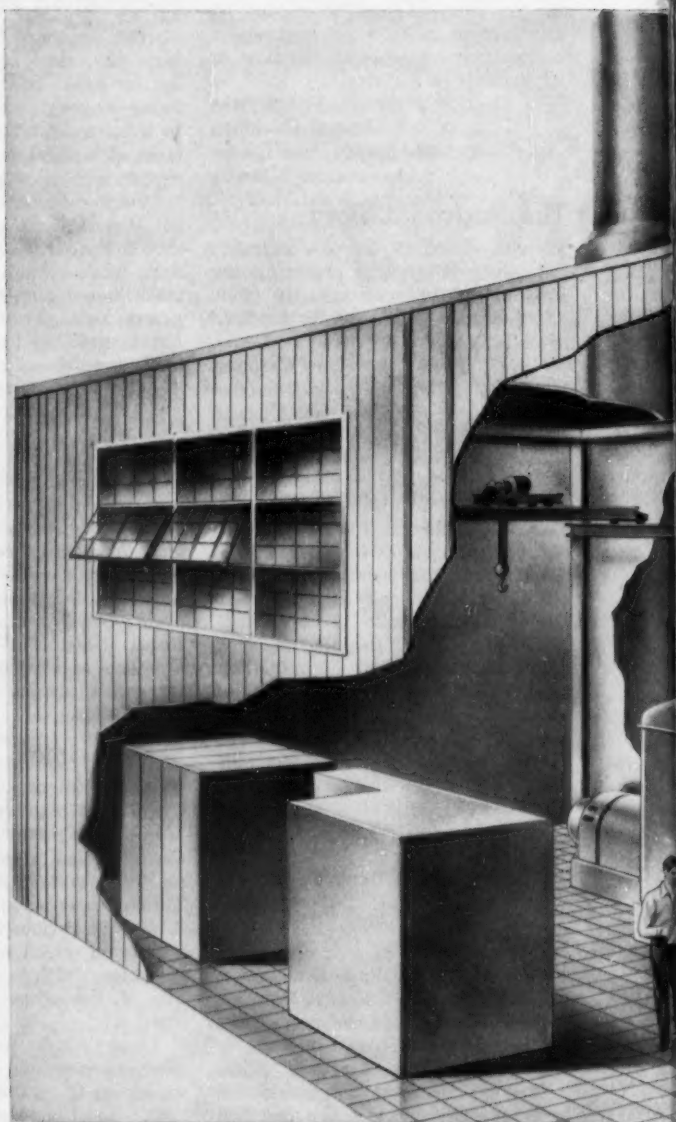
**Lower operating costs** resulting from:

- high power plant efficiency with exhaust heat utilized to supply plant steam and heat.
- reduced maintenance due to inherent simplicity of this rotating equipment.
- fewer personnel required to operate small, compact gas turbine power plant.

G-E gas turbines climax more than 45 years of successful turbine building. Contact your G-E Apparatus Sales representative and discuss the applications of a combustion gas turbine in your plant. Or, write for technical article GER-754, "Where Industry Can Use the Gas Turbine," General Electric Co., Section 662-45, Schenectady 5, New York.



**UP TO 120,000 LBS/HR** process steam is available from the General Electric gas turbine power plant using a supplementary fired exhaust-heat-recovery boiler. Even without supplementary fuel firing, 40,000 lbs/hr is generated.

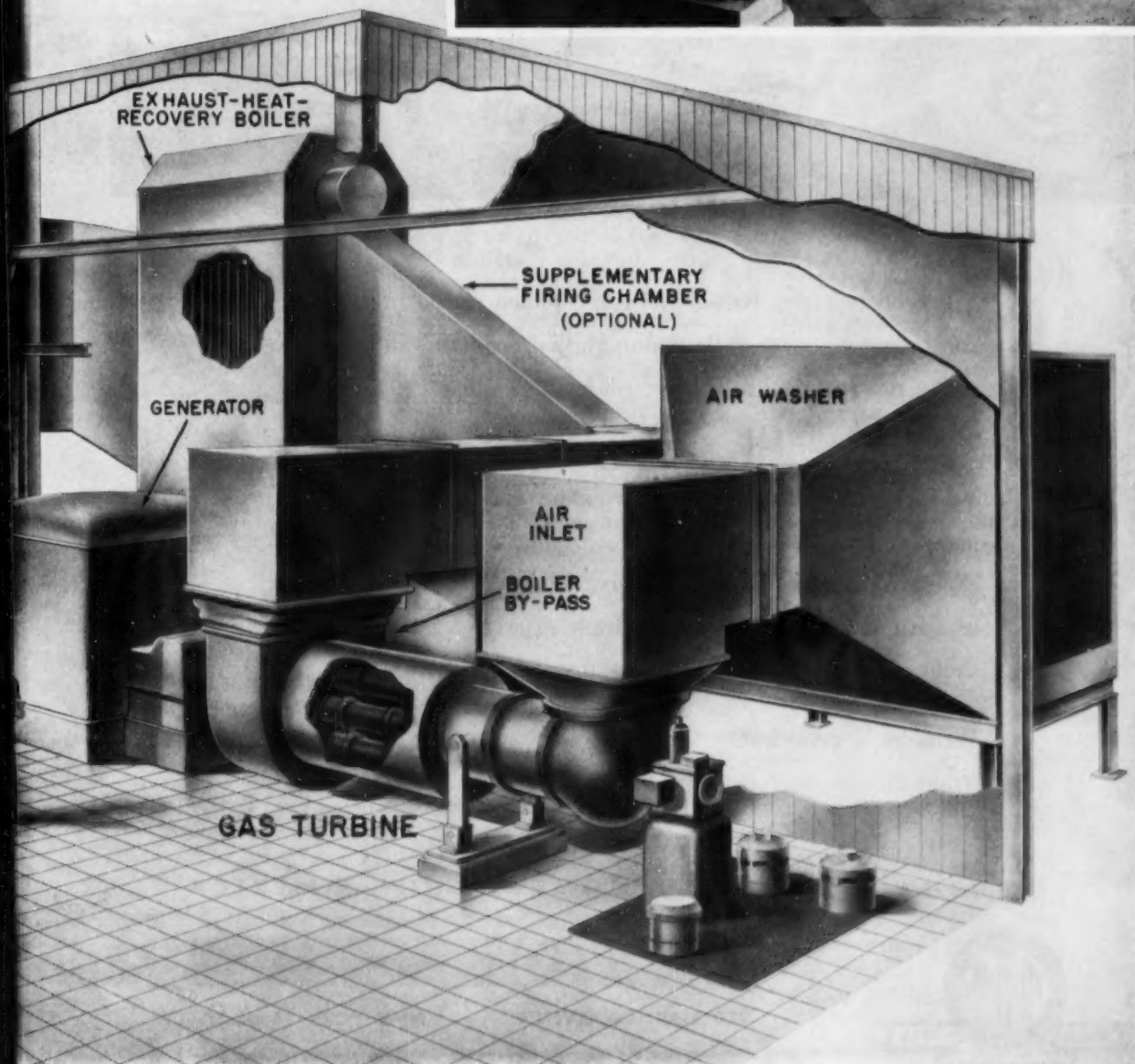
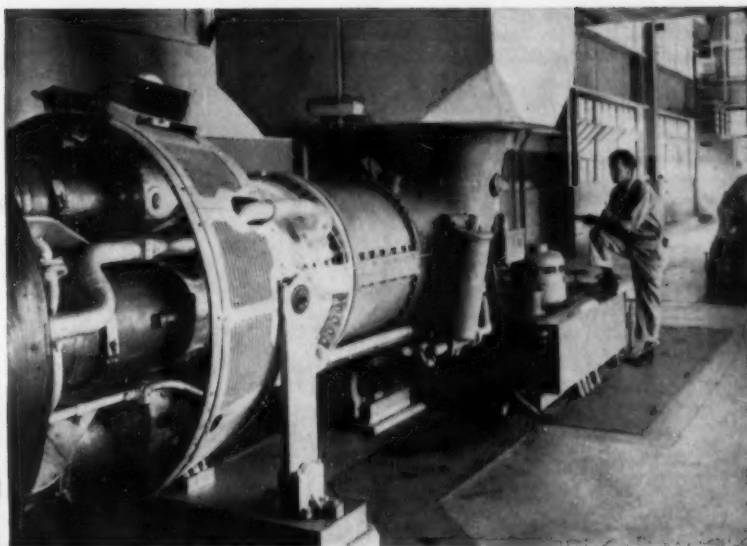


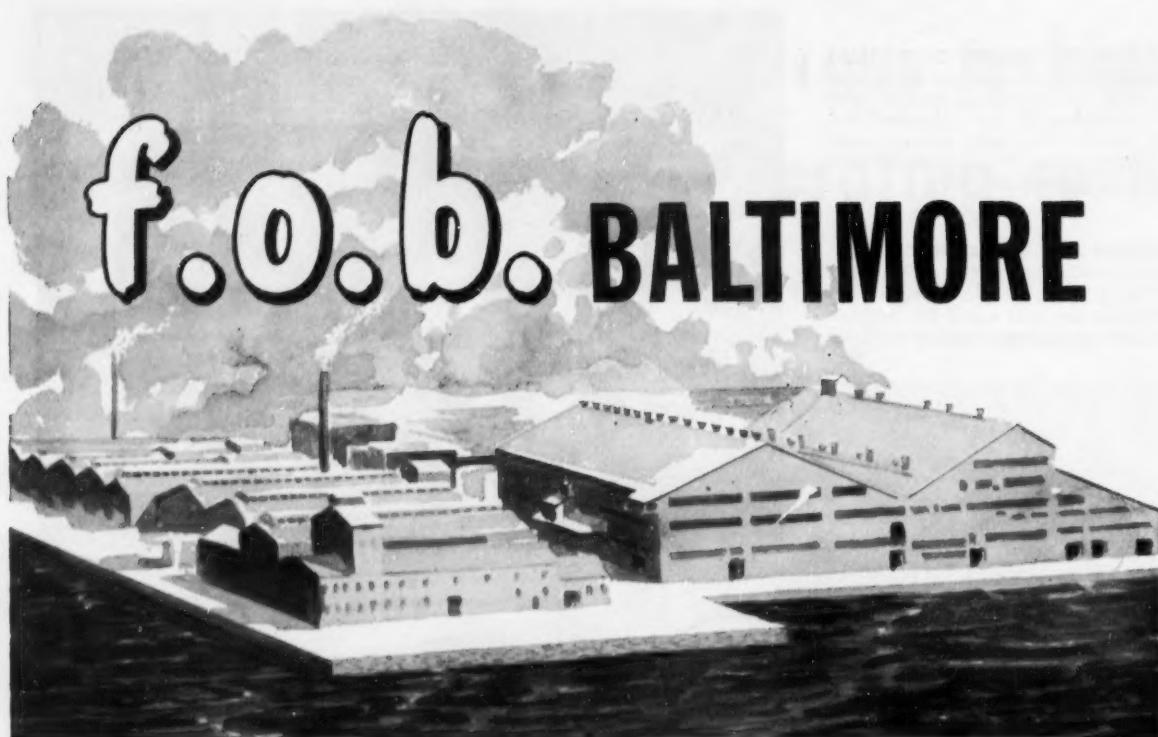
**GENERAL**  **ELECTRIC**



**OVER 30,000 HOURS OF ACTUAL OPERATION** have been accumulated on this G-E combustion gas turbine since its installation at the Oklahoma Gas and Electric Company. Exhaust-heat-recovery system preheats boiler feed water for power plant use.

**EFFICIENT AND ECONOMICAL** gas turbine power plant generates 5000 kw of electric power at .8 power factor. Gas turbine is also well suited for mechanical-drive applications up to 6700 hp.





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Wherever there is need for chromium chemicals—pigment manufacturing, plating, leather tanning, corrosion control, chemical oxidation, wood preservation, textile dyeing—the user can depend on the Mutual trade mark as a guarantee of uniform, high quality products and reliable service.

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## NEWSLETTER

Where pollution's concerned, there's a sure-fire way to avoid tiffs, unpleasant legal relations with the community: police your plant, then tell the public. Two members of the process industries are doing just that this week:

- In Tuscola (Ill.), National Petro Chemical is rushing construction of a temporary recirculation system that will keep wastes from the plant out of the drought-stricken Kaskasia River.

The firm ran into trouble when citizens of Shelbyville and other downstream cities complained the effluent made the river water unfit for human consumption (CW, Mar. 13).

Earlier, National managed to stop the discharge of caustic and acid-producing compounds into the river (the effluent is now practically neutral). While the recirculation system provides a temporary solution, University of Illinois chemists will analyze the water in an effort to pinpoint the troublemaker in the process.

- In Niagara Falls, Oldbury Electro Chemical decided the best proof was showing. Badgered by complaints about air pollution, Oldbury took six of the plant's neighbors and the director of the local air pollution control body on a two-hour tour of the plant. Conclusion: smoke emissions from the plant do not contain dust.

Here are two developments about which you're bound to hear more:

- Lithium sulfonates are being tested as an additive for heavy-duty motor oils. The work, which is just moving out of the research stage is being carried out by a major oil company in cooperation with Foote Mineral, which is supplying the lithium hydroxide raw material.

- Antibiotics are under investigation as growth-stimulants in baby foods. A big pharmaceutical manufacturer is hard at work on it, others are either working along similar lines or eyeing the project closely. A good guess at this point is that within six months, there will be a baby food on the market that contains both an antibiotic and vitamins.

Strained are the relations between Chemical Construction and Virginia-Carolina. Contending that Chemico failed to discharge its contract responsibilities concerning the fertilizer facilities being built for V-C by Chemico at Nichols (Fla.), V-C is withholding payment. Chemico has started a suit asking for \$916,000 plus interest and costs.

V-C's general counsel John Pearsall says he intends to oppose the Chemico claim and to file a counterclaim for damages sustained by reason of Chemico's alleged slip-up.

But while Chemico is bickering with one firm, its parent company, American Cyanamid, swung a major deal with another firm last week when it contracted to sell its Gloucester City (N. J.) titanium dioxide plant to New Jersey Zinc. The 57-acre plant is rated at 20,000 tons/year of pigment. Cash involved remains undisclosed.

Cyanamid will hold onto the plant until its new and bigger plant

at Savannah (Ga.) is completed. That should be some time during the fourth quarter of next year.

Cyanamid, then, looks on the transaction as a neat transfer for cash of a plant that it doesn't really need. And New Jersey Zinc looks on it as a speedy way of diversifying into a new field.

The latter company has been researching the whole picture for several years. It owns a third of the Quebec Iron and Titanium Corp. (Kennecott owns the rest), which will provide the raw material. The Canadian venture is pioneering a process to produce iron and a titanium-rich (70% titanium dioxide).

Slag from ilmenite deposits in the Lake Allard region of Quebec (CW, Oct. 11, '52 et priori).

•

Business men are asking themselves this week, as they have for the past several months: Is the slight dip in business activity simply a normal readjustment—or is it a precursor of a full-fledged economic skid? Although Secretary of Labor Mitchell observed signs of "slowing down in the rate of decline," employment, one good index, continued to drop through the month ending Feb. 15.

Possibly an even better index, however, is the amount scheduled for capital expenditure. And a joint report by the Commerce Department and the Securities and Exchange Commission due for release this week sounds an optimistic note on that score. In brief, here's what it will say:

- Producers of chemical and allied products will spend \$1,310 million in 1954. This breaks down to \$370 million in the first quarter; \$353 in the second. The amount for the year, though not quite up to expenditures in '52 or '53, surpasses anything prior to that.

- Producers of coal and petroleum products will spend \$2,860 million this year. That's an increase over 1953's \$2,762 million, the previous record for that segment.

These up-to-the-minute figures substantiate McGraw-Hill's look-ahead compiled last fall (CW, Nov. 7, '53)—despite various pressures exerted since then on factors affecting the business outlook.

•

Duquesne Light and Power Co. of Pittsburgh will be the builder and operator of the first full-scale atomic plant to produce electric power for utility use.

The plant, to cost \$45 million, will be located in the Greater Pittsburgh area on a site as yet unrevealed; power output will be integrated into the electric company's system.

Duquesne is ready to go ahead as soon as the final contract is signed. It's expected that construction will get under way this year and that the plant will be completed within three years.

Design of the atomic reactor, which will furnish heat for the first large-scale plant of its kind, is already well advanced on the drawing boards of Westinghouse, also in Pittsburgh. (The Atomic Energy Commission last October awarded Westinghouse contracts for development, design and construction of the reactor.)

Duquesne, according to its offer, will pay \$5 million toward the cost of the Westinghouse contracts. In addition, it agrees to:

- Furnish a site for the whole project, build and operate the new electric generating plant at no cost to the government.

- Operate—and bear labor costs—of the reactor portion.

- Pay AEC at the rate of 48.3¢/million btu.'s of steam used in the turbines for the first year. This rate will increase gradually until it reaches 60.3¢ in the fifth year.

. . . The Editors

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...TO OUTFIT MILADY



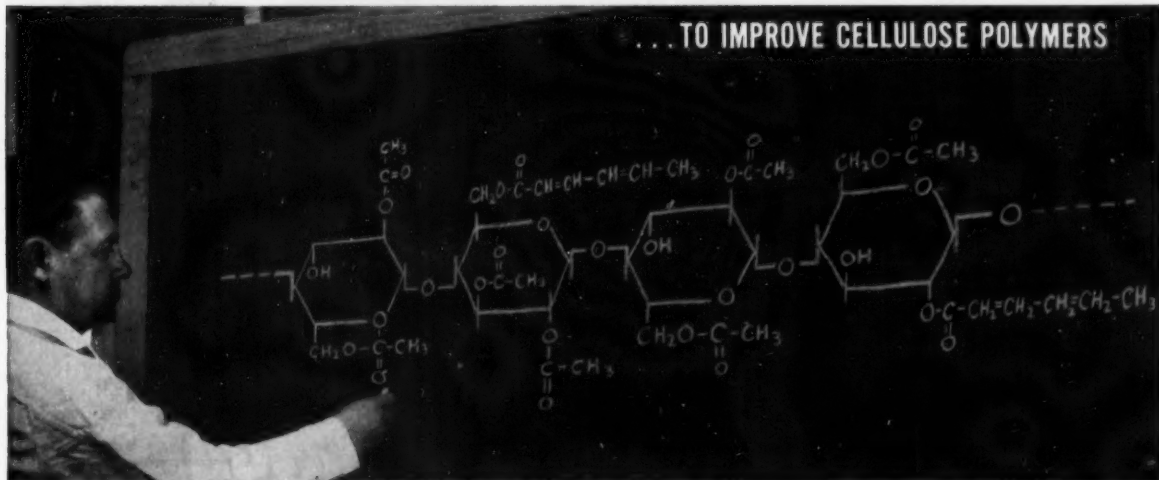
A new Hercules plant under construction at Burlington, New Jersey, will make the essential raw material for Canadian production of 'Terylene'—polyester yarn. Known as dimethyl terephthalate, or DMT, this basic chemical for polyester fibers will be made by an entirely new process, and will be available eventually for plastics and other uses.

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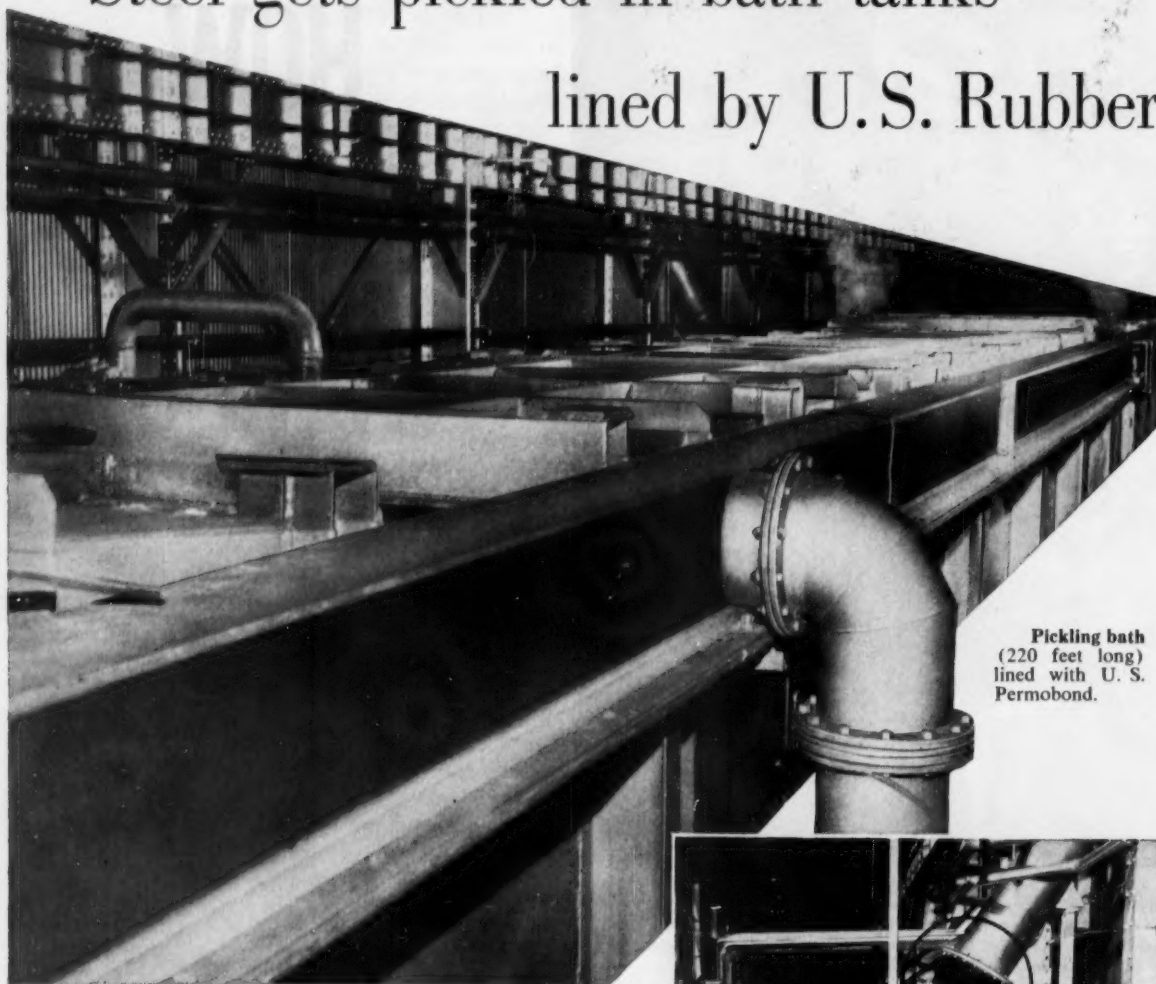
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March 20, 1954 • Chemical Week

13

# Steel gets pickled in bath tanks lined by U.S. Rubber



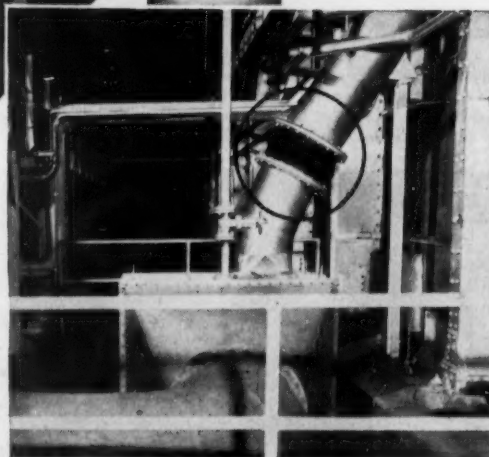
Pickling bath  
(220 feet long)  
lined with U. S.  
Permabond.

Many steel plants handle the hot corrosive acids used in pickling operations by means of tanks lined with Permabond, a product made and installed by United States Rubber Company. Without this rubber, the hot acids would "eat" and corrode the metal tanks.

Typical is this large Midwestern steel plant. The complete pickling unit, acid bath tanks and covers, rinse tanks, fume exhaust system, including a large stack, are all "Permabond-protected."

This steel plant also uses U. S. Expansion Joints to counteract expansion and contraction in pipe lines forming the duct system. And to provide flexibility, U. S. Pilot Flexible Pipe is used in the downcomers.

The "U. S." complete engineering service which designed, accurately fabricated, and Permabond-lined the many complex weldments into a finished, efficient pickling line is available to all industry. Consult any of our 25 District Sales Offices or write to address below.



Duct system lined with U. S. Permabond conveying sulphuric acid fumes to outside of plant. Note U. S. Expansion Joint at right.

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*U. S. Industry depends on it.*



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## BUSINESS &amp; INDUSTRY

## Side Issue on Taxes

Ordinarily, chemical companies aren't too much concerned about "luxury goods" taxation; but this week, as the general revenue bill comes up for Congressional action, chemical management also is watching the Reed bill on excise taxes.

Reason: whatever cuts are made in excise tax rates will have a bearing on relief that may be granted in the over-all tax revision bill (CW, March 13).

The Reed bill, calling for a \$900-million reduction in excise taxes, is up to the Senate this week after being passed in the House last week. It would trim levies on cosmetics, toilet articles, photographic film and other goods and services, keep in effect a billion dollars worth of post-Korean taxes that otherwise would have expired April 1.

## Civilizing the Atom

A glimmer of light for chemical companies interested in atomic electric power—that's the effect of the latest Atomic Energy Commission move, spelling out the commission's own five-year development program.

The Congressional Joint Committee on Atomic Energy has been pressuring AEC to do just that—one reason being that until the agency laid down its own program, private industry couldn't know how to plan its own first steps in the field.

AEC is now asking Congress to approve a program that calls for construction and operation of:

- A 60,000-kw. pressurized water reactor, costing about \$45 million. Because of its high capital cost, this one won't produce competitive commercial power. It's already on Westinghouse's drawing boards, and is scheduled for completion in four years.
- A breeder reactor of intermediate size—about 15,000 kw. Liquid sodium will be used to carry heat from the reactor to a heat exchanger to generate steam for the turbine. Not expected to be competitive with other sources of energy.
- A boiling-water reactor, rated for 5,000 kw. Economics of this type aren't well enough known to permit a guess on power costs.
- A homogeneous reactor—a scale-

up of an experimental model now in operation at Oak Ridge National Laboratories. Again the economics are little known, but this unit is considered by some to be one of the more promising for economical production of power. Initially, no generator will be installed on this project.

• A sodium-potassium, high-temperature graphite reactor with heat capacity of some 20,000 kw. Again the economics are dim.

To industry, all this projected activity on the civilian side is a welcome switch from AEC's previous preoccupation with bombs and projectiles.



NEW YORK'S MOSES: His reputation enlisted in behalf of state power.

## Deadlock and Delay

There might have been a chance that the Miller-Capehart bill—authorizing five private power companies to develop additional electric power eagerly awaited by chemical and metallurgical companies at Niagara Falls—could be enacted into law in time for construction to be started this year. But as of this week, recent developments seem to have erased that chance completely. That bill (CW, Feb. 13) had been passed by the House of Representatives last year, and now is pending in the Senate. Until last week, it appeared possible that a Senate majority made up of Republicans and Southern Democrats might support the measure.

**Dewey Drafts a Builder:** Then, on the day before Sen. Edward Martin's Public Works Committee was to start holding hearings on the subject, New York Gov. Thomas Dewey announced his appointment of Robert Moses—world-renowned administrator of public construction projects—to become a member (and probably chairman) of the New York State Power Authority.

Moses promptly journeyed to Washington and testified before the Martin committee, urging that the committee pigeonhole the Miller-Capehart bill and recommend passage of the Ives-Becker bill. That bill, favored by Dewey, would empower the State Power Authority to develop Niagara's remaining power potential and sell the power to privately owned utilities there.

Moses packs considerable prestige in Washington, and his influence with conservative senators was enhanced last year when he testified in favor of the bill to give the individual states jurisdiction over offshore oil and mineral resources. Also, his position was strengthened by the fact that as head of the State Power Authority, he already has the responsibility for building and distributing power from the New York-Canadian hydroelectric project on the St. Lawrence River at Massena, N.Y.

**May Shun Showdown:** With a close vote likely no matter what the Martin committee says in its report, insiders figure that Moses may be the key to Senate approval of the Ives-Becker bill—if it comes to a vote.

It's possible that the Republican leadership may want to avoid a showdown on Niagara, because that would be almost certain to set off a classic "private vs public power" debate—perhaps too hot to handle during an election year.

But if the Niagara issue does come to the Senate floor, and if the Moses advice prevails, there would still be little likelihood of setting the stage for starting construction work. Prospects clearly point to a deadlock, with the Senate leaning more and more toward the Ives-Becker bill plugged by Dewey and Moses, and the House sticking to its 1953 decision for private power development. It looks as though industries hoping for more cheap power at Niagara are in for a long wait.





QUARLES LUNCHEON: Conversation centers around charges that government research . . . is duplicated elsewhere.

## Tariffs, Techniques, Washington Trends



Almost 1,200 chemical engineers were in Washington last week for a national meeting of the American Institute of Chemical Engineers.

tute of Chemical Engineers.

Featured were technical sessions on such subjects as mixing techniques, methods of liquid entrainment, new procedures of mineral processing and fertilizer manufacture (see p. 104).

But this meeting was more than a technical gathering alone. Location was the key. Attending engineers heard from top government officials opinions as to the future of the chemical industry in such fields as atomic power development, Dept. of Defense Research, tariffs and economic policy. Too, they had a chance to see the physical facilities used by the Naval Research Laboratory, National Bureau of Standards, Naval Ordnance Laboratory, Bureau of Mines and the Naval Powder Factory.

Of special note: since about half of all U.S. research and development is supported by military and Atomic Energy Commission Funds—Donald

Quarles, Assistant Defense Secretary, spelled out current military R&D thinking.

Said he (left): "Government research has been criticized on the ground that it lacks clean-cut objectives. The new setup of intra-government coordinating committees, balanced by advisory groups from without . . . should help realistic program planning."

Another criticism—that of unneces-

sary duplication—was explained by Quarles. "In early phases, duplication is wholesome and desirable . . . should be reduced progressively, going from an exploratory research phase to development and finally into a production phase." There is no question that a better job could be done by government research executives . . . and will be soon.

"The mechanism now exists . . . for handling the situation. It is a



REACTION: Relief . . . "the government won't compete in nuclear reactors."





PLANT TOURS: Included . . . were trips to Navy Research Labs.

challenge to use it wisely and effectively." Another highlight of the session was the recounting made by the Atomic Energy Commission of its five-year development program for producing reasonable priced power from nuclear fuel.

AEC Commissioner Henry de Wolfe Smyth told engineers about five sizable reactors that the commission will build, was applauded by many who breathed audible sighs of relief. Included: executives whose companies are already studying private operation of nuclear reactors, and who have been hampered in policy planning by not knowing exactly what the government itself intended to do. The question they pondered was whether to buck government competition . . . assuming the government might have



LISTENERS: At technical sessions.



TARIFFS: Calm approach . . . to an incendiary subject.

construction plans a-brewing.

Of the reactors described (CW Newsletter, Mar. 13) only one is a new departure for AEC. This will use sodium-potassium as coolant, graphite as moderator. And while it doesn't come up to some proposals—such as the jetmixed centrifugally separated liquid-cooled reactor with liquid fuel and continuous reprocessing (proposed by an industrial group last year), it will have the advantage of operating at high temperatures without using a high-pressure coolant system.

Another subject of wide chemical interest—tariffs—brought this comment in a speech by Sen. Stuart Symington: "The reciprocal Trade Agreement approach is valid only when used to mutual advantage, and not as a give-away."

Future bargaining, he asserted, should "go a long way toward eliminating exchange controls and other devices that are now being utilized against American products."

From Undersecretary of Commerce Walter Williams, conferees heard this challenge to engineering: help bring into balance the "baffling, costly surpluses" and the "desperate shortages."

On shortages: "America remains a 'have not' nation in respect to numerous ores and metals essential to modern living and defense . . . millions of tons of energy-producing, marginal ores and metals lie untouched within our boundaries because man has not yet devised economical means of unearthing or refining them."

It adds up as a sober, thoughtful assessment of the problems faced by chemical men today. All can't and won't be solved immediately . . . but industry spokesmen are well aware of their potential responsibilities.

## Everyone Takes a Turn

Up to this week, almost everyone else has declaimed about what this Congress should do about tariffs, and now it's President Eisenhower's turn.

His trade-and-tariff recommendations—awaited with some trepidation by the industries that need protection—were to be sent to Capitol Hill in mid-week. It was expected that much of the President's statement would be based on the "trade, not aid" report of Clarence Randall's bipartisan Commission on Foreign Economic Policy.

Last week, as congressmen started working on their what-to-do-about-tariffs problem, still another chemical industry voice rang out with last-minute advice. Monsanto, which last fall pulled out of the National Assn.

of Manufacturers because some NAM officials appeared to be in sympathy with "free-traders," published in its *Monsanto Magazine* a strongly worded treatise taking sharp issue with the Randall report.

"There is no need to further reduce tariffs at this time," Monsanto declares. "Foreign chemical exports to the U.S. are on the increase. One direct result to date is the closing of facilities for production of one Monsanto product . . . There is a maximum amount of each chemical product that can be consumed in this country in a year. For the most part, the American chemical industry can deliver every pound of every product that can be used. If foreign production is added to this, especially at lower prices, then there will be unemployment in the American chemical industry . . . (and) . . . a lessening in the contributions it can make to both the peacetime economy and national defense."

Somewhat contradictory testimony came from Library of Congress researcher Howard Piquet (*CW*, Jan. 9), who told Congress that dropping all U.S. tariffs would cause only about 200,000 job displacements, and that the effect would be "much smaller" if tariffs were merely reduced.

Flooded with such conflicting testimony, Congress is groping for still more data. Sen. Eugene Millikin's Finance Committee last week asked the Tariff Commission to study the Randall commission's suggestion that all tariff rates now above 50% be lowered to that level.

## EXPANSION. . . .

**Pentasulfide:** Oldbury Electro-Chemical Co. will add a \$400,000 supplement to its plant under construction at Columbus, Miss., due for completion in April. The latest expansion will provide pentasulfide facilities.

**Intermediates:** Crosby Chemical Co. will expand its Picayune, Miss., facilities at a cost of over \$2 million. First step: purchase of stumpage rights of over 45,000 acres from Gaylord Container Corp., St. Tammany Parish, La. Next comes construction of new office buildings, sales, accounting and purchase departments, housing developments for company employees. Initial developmental work should be completed by July; plant construction work will follow immediately.

**Dyestuffs:** Gaston Chemicals, Inc. will build a plant to produce dyestuffs, plastics, various specialty chemicals

near Spencer Mountain in North Carolina. Ground-breaking: June 15.

**Nylon:** American Enka Corp. will expand its semicommercial nylon plant at Enka, N.C., at a cost of \$1.6 million. When completed, the company will turn out both nylon textile filament yarn, tire yarn, and staple fiber. Initial staple fiber production is slated to begin next month.

## COMPANIES. . . .

**Corporate acquisitions, contracts, stock exchanges:**

- **Ruberoid Co.** (New York) has bought the assets and good will of the Dixie Asphalt Products Corp., Savannah, Ga. Terms are undisclosed. Ruberoid manufactures asphalt and building materials; Dixie, with some \$3 million in sales in 1953, produces asphalt shingles and roofing.

- **American Cyanamid Co.** has signed an agreement with the City of Savannah, Ga. covering use of industrial water for 30 years. Cyanamid's \$15-million titanium dioxide plant (due to start in April, 1955) will take the bulk of company requirements,

will use 3-4½ million gal. daily.

- More than 50% of the 4.5 second convertible preferred stock—called in by the Spencer Chemical Co. in a share-for-share trade for common stock—has been exchanged, company executives say.

- **Dragon Consolidated Mining Co.** stockholders have approved a \$2-million lease and option agreement with Filtrol Corp. for development of Dragon Mine near Eureka, Utah. Filtrol will pay \$2.50/ton net royalty for halloysite clay from mine, has an option to buy the clay outright ("in place") for \$2 million in five annual payments. Production is expected to reach 75,000 tons in 1954.

**Company earnings for 1953:**

- **Texas Gulf Sulphur Co.'s** sales \$78.3 million, jumped 6.8% over 1952 returns; net (after taxes) lagged 2.4%—to \$24.5 million.

- **Schering Corp.** (ending its second year under private U.S. ownership and management) reports sales up 0.3%—to \$19.5 million; nets down 4.9%—to \$1.8 million. Reason: losses from Brazilian holdings.



## Peroxide Powered

GREAT BRITAIN'S secrecy-shrouded submarine—the *Explorer*—was launched this month at Barrow, Eng. Claimed to be the world's fastest underwater craft, the 225-ft. vessel uses hydrogen peroxide (instead of air) as its combustion

element, is able (as a result) to go on longer missions under water. Construction, performance details are still unavailable, but U.S. Naval authorities note that the *Explorer's* power system could well set a new trend in submarine design.

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| HOW TO TELL YOUR<br>BUSINESS STORY IN     | Employee Meetings  | How to strengthen employee<br>loyalty with letters | <b>Annual<br/>Report</b>                            |
| Economic Education thru Employee Meetings |  |  |   |

## Exit the Attitude: 'I Just Work Here'

It isn't enough to be tooled up with mechanical equipment these days; companies now are finding it worthwhile to tool up as well with devices to turn employees' attitude from cool indifference to warm allegiance.

One of these devices whose general aim is to make every worker feel that he's "a member of the firm" and not just a machine-age hireling is the employee magazine or "internal house organ" (CW, Feb. 27). More personal and more direct are several other devices now being used in combination under a scheme known as the "Explain Your Business" program (EYB). This week, a spot check by CW of leading chemical and petro-chemical companies throughout the nation shows that this program, in varying forms, is coming to be standard industrial relations practice in this industry (see table).

Through EYB, an employer tries to make friends with his employees; to show them that the company is trying to be fair with all its employees, stockholders and customers; and to help them understand the company's position vis-a-vis the government, the labor unions, and the competitors. The house organ can be an important part of EYB, but best results seem to come from a balanced blending of various tactics—including regular letters to employees, showing of motion picture films about free enterprise capitalism, making bulletin boards briskly enticing, and above all, informal meetings with employees in groups as small as possible.

**Chemical Pioneers:** Much of this plan has been modeled on DuPont's program for telling employees "How Our Business System Operates" (HOBSON). Bakelite, Monsanto,

Sharp & Dohme, Dow, and Abbott also are leaders in the field. The main ingredient in the recipe is the employee meeting in which workers have a chance to talk things out with management directly, rather than through intermediaries. Calling employees into a meeting shows them that management recognizes their

importance; a notice on a bulletin board rarely is any more personal than the "4 milk, 1 cream" kind of notes that a milkman finds on dawn-chilled doorsteps.

Here's one plan for a series of employee meetings aimed at developing a better understanding of the company and its problems: first ses-

### CHECK-LIST FOR COMMUNICATIONS

*Out of eight leading chemical and petrochemical companies, the number carrying on these activities to help employees understand the companies' business and economic problems:*

- |   |  |   |
|---|--|---|
| ✓ | Annual report to employees,<br>itemizing main expenditures . . . . .   | 7 |
| ✓ | Periodic letters to employees,<br>explaining company affairs . . . . .   | 6 |
| ✓ | Magazines for employees<br>(internal house organs) . . . . .<br>(and the 8th company plans to start its house organ soon)  | 7 |
| ✓ | Employee-management meetings<br>to discuss matters of<br>mutual concern and to<br>clear up misunderstandings . . . . .<br>(and another company plans to start holding meetings soon) | 6 |
| ✓ | Business-education days<br>for the public . . . . .  | 6 |
| ✓ | Other programs aimed at<br>winning support of<br>employees and public<br>for company and free enterprise . . . . .   | 7 |



sion, history of the business; second, how our economic system operates; third, our standard of living; fourth, the role of government in our economy; fifth, profits and wages; sixth, money and prices; seventh, breakdown of the sales dollar.

"The meeting," says one authority, "is the best means you have for recognizing human worth, for showing your people they are a primary concern in your thinking. The meeting gratifies human desires for group action. It can give employees a feeling of belonging to a harmonious team. These are deep, basic psychological yearnings in people."

**Chamber's Crusade:** Ardently pushing the EYB program is the Chamber of Commerce of the U. S., which now offers numerous publications designed to help management men carry out the various steps at their own plants and offices. Heading this service for the chamber is Paul Good, whose Education Dept. issues a monthly pamphlet ("Explaining Your Business") that reports latest ideas on EYB.

Besides providing bushels of booklets of advice, the chamber is boosting EYB by sponsoring conferences throughout the country to coach local management men on techniques to be used. To attend one such meeting at Tulsa, Okla., last fall, employers traveled as far as 187 miles in chartered buses and planes. Topics discussed at these conferences: how to explain business problems in terms of their employees' own interests; why inventions or new ideas in merchandising create more jobs; how employees, management and owners have a common stake in the success of a business.

There's need for helping employers prepare to conduct employee meetings, Good believes. Reason: a good executive might not necessarily be a good discussion leader; sometimes a little training can enable a man to express ideas so they'll be more readily grasped by an audience. He quotes General Motors research director Charles Kettering as having said that although we have perfected communications techniques to the point where we can flash a signal around the world in one-seventh of a second, it still frequently takes from one to two years to penetrate a quarter-inch of human skull.

**The Personal Touch:** Although not a new idea, use of letters to employees to help improve company-employee relations is receiving increased attention these days. These letters are intended to show the

employee that the president or plant manager is taking a personal interest in him, wants him to be happy in his work, wants him to understand what the company is doing and why. A letter, it's to be observed, gets a message to an employee directly; the firm doesn't have to relay through shop foremen or union officials.

Another practice that's being adapted to the EYB program: sending special editions of annual reports to employees—simplified, personalized, made more graphic so they'll be read and understood; the ideal is to explain company operations in terms of people and tools rather than in statistics and technical terms. Bulletin boards are being enlivened with more pictures, more news items about people (new employees, promotions, retirements), more frequent changes of announcements (twice a week is considered good).

Why have chemical companies taken a leading role in this more serious effort to make workers feel like welcome members of the corporate family, not like outsiders? One plausible answer: because chemical firms—highly mechanized and integrated—have particularly great need for employees who are loyal and conscientious; and management knows that these qualities can't be bought, must be earned.

## A Rose by Any Name

Nowhere is nomenclature so important as in the U. S. Customs Court; and—as evidenced by some of last week's cases—particularly in that court's chemicals and metals division is terminology frequently the crux of decisions as to whether there'll be a protective tariff or a low duty on a given import.

In a never-ending stream, cases involving disputed classification of imports flow past the nine Customs Court judges, who are called upon to make distinctions that to laymen may seem pretty finely drawn, but which may make all the difference between profit and loss to the importers and domestic manufacturers concerned.

One recent decision illustrates the doctrine that a product can't always be classified according to its name. Armour & Co. won its protest on classification of polyvinyl pyrrolidone, the court agreeing that this is a medicinal preparation not specially provided for in the tariff schedule.

**Medicinal Resin:** The Collector of Customs thought he was only being logical in classing this polymer as a synthetic resin, dutiable at 30% plus

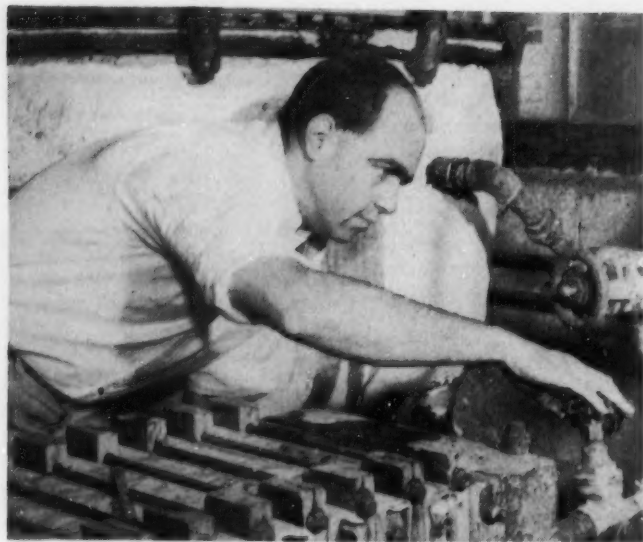


**CUSTOMS COURT'S LAWRENCE:** A steady stream of fine distinctions.

4¢/lb. But at the hearing, it was established that although polyvinyl pyrrolidone is a synthetic resin (molecular weight about 80,000), its principal use is medicinal. The court then ruled that the tariff provision for "all medicinal preparations" should govern in this case, and that a synthetic resin shouldn't be classed as such if it isn't going to be used in plastics.

In a somewhat similar situation, the Collector of Customs at New York had levied duty at 25% and 3½¢/lb. on Ciba Pharmaceutical's imports of phyllostachys under the tariff act's provisions for coal-tar products; and again the importer succeeded in winning a lower duty classification. In another headline decision, Judge Charles Lawrence wrote that this product is a medicinal preparation with therapeutic properties, and that it isn't listed in either of the law's paragraphs on coal-tar products. (Observers commented that it couldn't have been listed there, inasmuch as the product wasn't known when the act was written 24 years ago.)

Still another recent decision illustrating this principle—even though it doesn't involve chemicals—was penned by Judge Lawrence. Public law 869 authorizes free entry for scrap metal suitable only for remanufacture, and the Customs Bureau instructed its collectors to limit such free entry to shipments that actually looked like scrap metal. Some importers who brought scrap metal into the country in the form of ingots protested against that directive, and the court ruled that the ingots, too, should be entered duty-free.



GORDON: Neither time, nor money for mistakes . . .



MACKIE: Responsibility . . . had to be clear-cut.

## No Margin for Error

Like adventurous children, chemical companies can differ widely in their aims and undertakings, but a basic similarity exists between them. All of the problems inherent in technology, management, sales can't be spread out amongst a host of experts; yet there's no margin for making errors.

That's the basic difference in working for yourself; that's the single biggest headache that breaking into the chemical industry imposes on modest-sized companies.

But the headaches are well worth the trouble, assert the founders of Titanium Zirconium, Inc., who are breaking in to the titanium acetate market this week with a 35,000 lb. production capacity. The road's all uphill at first—especially when you're crashing a solid market. You fight raw material supplies (Titanium Zirconium gets its basic materials from Australia), blunder into pollution mud-dles, scramble for construction materials at a price low enough to enable you to get a break on competitors.

Setting up sales outlets, discovering new uses are a continuing problem; speed in breaking out of production difficulties can spell the difference between bankruptcy and solvency.

Best insurance, agree William Meredith (Titanium Zirconium's president) and George Gordon (vice-president) against any troubles that may arise is a "hand-in-glove" policy right down the line. Each man has to assume specific responsibilities, strive not to "cross lines" . . . but gain from each other's experience through constant exchange of ideas.

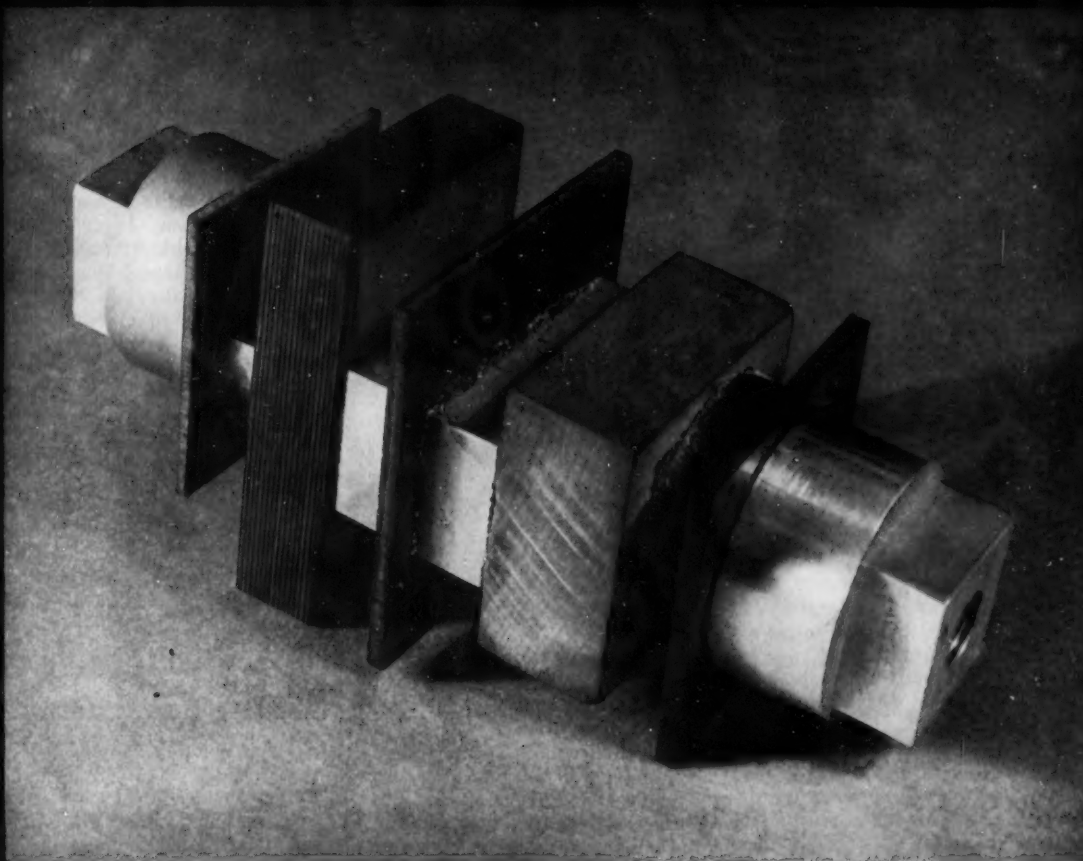
And the second most important factor in success is setting goals, purposes as precisely as possible. In their own case, the founders of Titanium Zirconium, Inc. felt there was a need (and market) for high-purity zirconium salts. Small amounts of gelatinous silica contaminated most salts, then available, limited the use to which they could be put.

Some thousand headaches later, the venture was launched; production started last May with a capacity of 12,000 lbs./month of zirconium salts and 40,000 lbs. of C.P. zirconium oxide.

But the hump was far from passed. Recollects Meredith: "While our process was still in its gross stages (in the laboratory), we were under such pressure to produce that we had to work out many of our techniques as we went along. Sometimes we struck what appeared to be a blank wall." An example: "We started using calcium ferrocyanide to remove iron from our



MANAGEMENT SESSIONS: Thrashed through a hundred and one problems . . .



## Rohm & Haas Methacrylic Acid Improves Adhesion of Copolymers

Recent reports in research literature indicate that methacrylic acid gives unusual adhesive strength to copolymers. For example, the copolymers of butadiene and methacrylic acid are excellent rubber-to-steel adhesives. These are desirable for engine vibration mounts and other applications where rubber must be fastened to metallic surfaces.

Copolymers of methacrylic acid and other polymerizable products, such as vinyl monomers and styrene, show promise as tire-cord

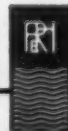
adhesives, paper finishes, and adhesives for bonding fibers, paper, wood, and ceramic products.

Methacrylic acid improves the emulsion stability of copolymers and is an intermediate for water-soluble or alkali-soluble polymers. It is used in the synthesis of methacrylate esters such as glycol dimethacrylates. These properties—and the new lower price—may well combine to solve your problem. Why not find out? Write for your sample of this or other monomers—and the 38 page booklet on monomeric acrylic esters.

Look to Rohm & Haas for acrylic monomers:

|                       |                          |
|-----------------------|--------------------------|
| Methyl acrylate       | Butyl methacrylate       |
| Ethyl acrylate        | Hexyl methacrylate       |
| Butyl acrylate        | Decyl-octyl methacrylate |
| 2-Ethylhexyl acrylate | Lauryl methacrylate      |
| Methyl methacrylate   | Stearyl methacrylate     |
| Ethyl methacrylate    | Glacial methacrylic acid |
|                       | Acrylic acid             |

CHEMICALS



FOR INDUSTRY

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*Representatives in principal foreign countries*



zirconium sulfate, found inevitably that it reacted with the zirconium as well as with the iron, forming a slime impossible to filter out at the pH at which we were operating. The snag almost swamped us . . . but we eventually came up with three alternate methods of removing iron . . . all of them workable."

**Getting In Order:** Obtaining equipment was a hazardous affair at best. Almost all the company's construction materials (except those that required special design work) were bought second-hand — from dealers, other chemical companies, junkyards.

No floors were in the buildings (rented from an ex-hormone producer); no poly-phase power was available; roads, water wells had to be constructed. "On the water problem," recalls Donald Mackie, treasurer, "we were strictly lucky. The rig had been drilling for several weeks (at \$4/ft.), struck a seam tested at well over 75 gal./minute—ample for all present requirements."

Having achieved their initial objective, executives are asking themselves "what next?" Immediate plans call for developmental work on other zirconium salts, a method of opening zircon sand (one of the most unreactive minerals known), production of certain titanium salts. Consumers, says Meredith, can be found in ever-growing numbers. One prospect: a major growing market for zirconates in the electronic tube field.

In any case, Titanium Zirconium is well launched on a drive to make its products known in the chemical industry—to establish a position for itself as an active contender for present and upcoming markets.



MEREDITH: Main asset, hard work.



ICI'S FLECK: For Britain's biggest chemical firm, profitable new pastures.

## Empire Abuilding

World-girdling Imperial Chemical Industries Ltd., Britain's \$1.2 billion chemical behemoth, plans to spend \$364 million in the next six or seven years for added plant capacity to produce everything from soda ash, caustic and chlorine to titanium, nylon polymer and Terylene (Dacron in the U.S.) fiber. The huge expansion will be financed, in part, from a record \$84-million offering of 4½% unsecured loan stock, largest ever issued by a British firm.

The loan stock, redeemable in 1972-74, has been offered to ICI's 250,000 preferred and common stock holders. In addition, ICI management, headed by board chairman Alexander Fleck, will propose to stockholders at their June meeting a capitalization of \$224 million of reserves and an overhauling of ICI's capital structure.

**More Realistic:** This will bring ICI's issued capital more realistically into line with actual working capital. (At present, ICI's reserves are twice as large as required for the proposed capitalization move.)

Of the \$224 million of reserves to be capitalized, close to \$198 million will be covered by an issue of one new common share for each old share now held. The remainder, almost \$27 million, will go into a two-for-five issue of preferred, with the dividend rate reduced from 7% to 5%.

With nominal capital increased and the dividend rate reduced, the total preferred dividend will remain unchanged. Converting the preferred from 7% to 5% is expected to facilitate

the marketing of any future issue—although no additional issue is now contemplated.

**New Horizons:** What will ICI do with these new funds? Projects already approved will take \$168 million, another \$196 million worth of expansion is expected to be approved in the next three years. In 1950, \$14 million was earmarked for nylon polymer; this will be increased by another \$22.4 million. Breaking into titanium, ICI will venture \$10 million in a plant to produce 1,500 tons/year. And the big Wilton plant in Yorkshire, where ICI makes Terylene fiber, will get \$33.6 million.

Since war's end, ICI has spent an impressive \$588 million on capital construction, has boosted output of chemicals and other products by 80% since 1946. (Each year the company plows \$30 million into research.) Payoff: with gross sales exceeding the \$774 million of 1952, ICI expects to pay a record 15% dividend on 1953 business.

## Nearer Enactment

Clearing another hurdle, the Miller pesticide bill (H.R. 7125) was reported out of the House Committee on Interstate & Foreign Commerce last week. The committee's recommendation, plus endorsement by industry and the Food & Drug Administration, virtually assures House passage in the near future.

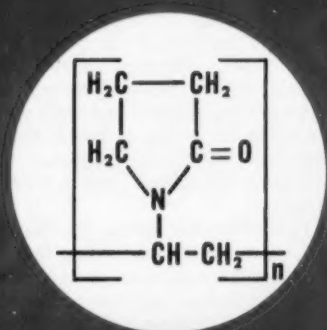
A similar bill (S. 2868) introduced in February by Senator George Aiken is awaiting action by the Senate Labor Committee, to which it has been referred.

Approval by the House committee came after a day of placid hearings, with statements by Representative A. L. Miller of Nebraska, who introduced the bill, Lea Hitchner of the National Agricultural Chemicals Association, and Carlos Campbell of the National Canners Association and Nelson Rockefeller, acting Secretary of Health, Education & Welfare, who gave FDA's position on the bill.

As approved, the Miller bill will speed the setting up of tolerances on pesticides, will require a test of agricultural usefulness for any chemical. Further: it will force FDA to move on all matters within 180 days.

Although FDA wanted the bill to authorize collection of fees for such testing and safe tolerance determinations the committee chose to ignore the request . . . assumes that a separate bill will be considered at some later date to authorize fees for FDA services.

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for industry



# Polyvinylpyrrolidone (PVP)

## unique combination of properties

- binds and stabilizes many organic and inorganic compounds
- compatible with physiologic fluids and body tissues
- substantive to hair
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- protects and stabilizes suspensions, dispersions and emulsions
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## wide range of applications

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- chemical (protective colloid for polymerization and other chemical reactions)
- cosmetic (binder, stabilizer and film former in skin and hair preparations such as skin lotions, powder bases, hair tonics and lacquers, wave sets, shampoos, shaving creams, deodorants, depilatories, perfume fixatives, etc.)
- food (stabilizer, thickener, flavor improver, etc.)
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*From Research to Reality*

**"The more trade through the Iron Curtain between Great Britain and Russia and her satellites, the better will be the chance of our living together in increasing comfort . . . A substantial relaxation of the regulations affecting manufactured goods, raw materials and shipping . . . would undoubtedly be beneficial . . . We are examining these lists [of products] and will discuss them with our American friends . . . I am speaking . . . only of trade with Russia. We cannot relax restrictions on trade with China until a Korean or wider Far Eastern peace."**

## Bulldog and the Bear

Undaunted by the meager results at the recent four-power Berlin conference, Prime Minister Winston Churchill is championing for increased trade with the Soviet bloc, excluding Red China. Sir Winston wants present controls on strategic goods, other than military equipment and tools for making weapons, substantially relaxed. And such easing of controls would immediately affect East-West trade in chemicals.

When 33 British businessmen visited Moscow recently, the Soviet dangled the lure of \$1.1 billion in Soviet purchases before their eyes. The catch: slyly seeking to torpedo the West's strategic controls, the Soviet had made sure that half the goods could not be shipped unless the allied embargo were modified or lifted. So far, contracts have been signed for only \$45 million, mostly machinery.

Meantime, the British are seeking trade with other countries of the Communist bloc. Negotiations with Poland began in London early this month, those with Hungary begin this week and those with Czechoslovakia early next month. France, too, is after more trade with Communist countries.

British imports from Russia fell to \$112 million in 1953 from an average of nearly \$168 million in the previous two years. British exports to Russia were only \$9.24 million. And re-exports, mainly rubber, had sagged to \$25.2 million.

**Chemical Trade:** Chemical exports from the United Kingdom to the Soviet bloc, excluding Red China, totaled only \$2,745,000 in 1953. In addition, the United Kingdom shipped chemicals valued at \$2,321,000 to Red China. Included: ammonium sulfate, acids, sodium compounds, penicillin and other medicinals, paints,

colors and pigments, and finished dye-stuffs.

In return, Russia and her satellites in Europe have recently been offering to export manganese and chrome ore, oil and certain chemicals. (Production of chemicals in the Soviet reached 102% of the "quota" under the Five-Year Plan in 1953.)

Britain, like other countries in Europe, wants as much trade with Russia and her European satellites as she can get without endangering the security of the West. This could mean relaxing current restrictions on shipments to Communist countries, as suggested by Churchill.

Neither British nor U.S. officials will disclose what commodities are on this restricted list. It probably includes atomic materials, synthetic rubber and a host of chemicals. But the fact that the list is secret can permit shifts in



**CHURCHILL:** A determined bulldog champs at restricted British foreign trade.

policy or practice without public knowledge. How: simple recategorization of what's strategic.

**Washington Sympathetic:** In Washington, the Administration is sympathetic to the pleas of Britain and other countries of West Europe for increased trade with the Soviet bloc. Last week, although aware that Britain, France, Italy, Denmark and Norway had shipped strategic goods valued at \$6 million to Soviet Russia, President Eisenhower ordered U.S. military and economic aid to them to continue.

Paralleling his action, the Randall commission is recommending that the U.S. acquiesce to more trade between Western Europe and the Soviet bloc if it doesn't jeopardize the West's security (CW, Feb. 6). And FOA Director Stassen thinks this can be done if the NATO nations tighten up on strategic goods, while increasing trade in nonstrategic materials and "aiming always to get the greatest possible advantage for the free world."

**Impact on Chemicals:** Main importance to U.S. chemical industry of increased East-West trade in chemicals would be decreased competition in third markets. It might also divert from the U.S. shipments of West European-made chemicals. Europe's chemical industry already exports 40% of its output and its production capacity is climbing fast enough to make U.S. chemical executives chary.

## Rush for Copper

**Strongly reminiscent** of the gold rush days in the U.S. a century ago is the current excitement about copper deposits in Canada. Centering around Geraldton, Ont., as a jumping-off point, prospectors are streaming into the Lake Manitouwadge and Pic River district, where "considerable deposits" of the metal have been found on the property of Marathon Paper Mills, Ltd.

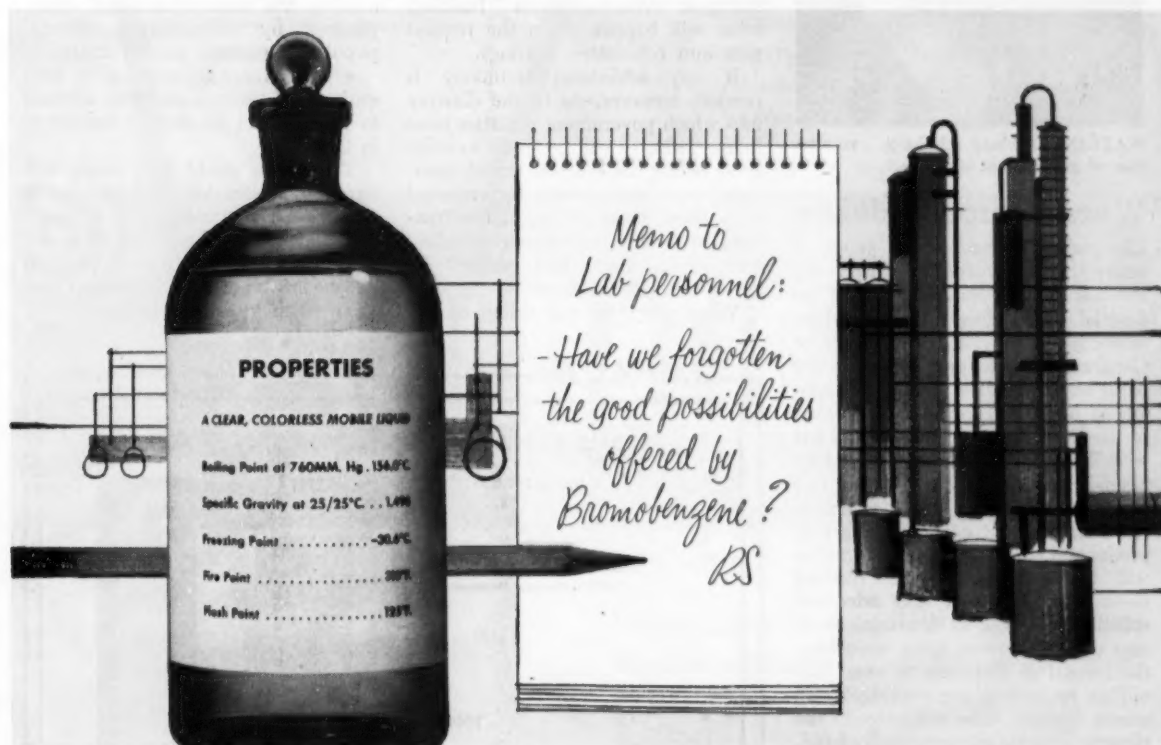
Bearing the brunt of the northwest trek is the Canadian National Railway, which reports ever-increasing loads of eager prospectors. Adding to the bustle, two Sikorsky helicopters have started daily runs to Marathon headquarters, carrying heavy equipment, supplies to the encamped miners.

Mining engineers won't commit themselves as to the extent of the deposits, but industrialists are frankly excited, point to the discovery as a major safeguard to Western supplies of the metal that has proved more valuable industrially—if not monetarily—than gold during the past two wars.



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WATKINS: A sharp rebuke . . . re attrition of government statistics.

## Warning from Industry

The most important single gauge of activity in the chemical industry—the Federal Reserve Board's Index of Industrial Production—is in immediate jeopardy as a result of the failure of Congress to vote appropriations for basic census studies. That's the opinion of industry experts (led by Dun & Bradstreet's Ralph Watkins) in last week's report to Commerce Secretary Sinclair Weeks.

Dependent upon the census of manufacturing to chart current changes in production, chemical manufacturers will be hard-pressed, the Watkins committee states, to find adequate substitute indexes to determine business ups and downs. More important, the refusal of Congress to vote \$3.8 million to update the manufacturing census appears to be indicative of the present "erosion and attrition" of federal statistics. If the trend continues, there's more than an outside chance that the most important series of all—the one measuring total output of goods and services—may soon become a hollow shell.

To stem the tide, the Watkins committee pleads for a sharp reversal of budget policies "that are buffeting and damaging key programs . . . vital to the chemical industry."

Behind the Watkins report (and its sharply critical tone) lies a long history of budget reduction. In 1948, when the Republicans controlled Congress, a comprehensive reorganization of census bureau enumerations were drawn up—the foundation of almost all U.S. statistics. Over-all plans called for six major censuses (1954, 1955), covering all important segments of

U.S. economy. But the plans have come to naught; Congress consistently refuses to vote the money necessary to translate plans into action.

**One Faint Hope:** Industry's warning—expressed in the Watkins report—may be a fresh spur to Administration support for adequate census-taking. Armed with industry's opinion Secretary Weeks has requested the Budget Bureau to approve a special \$8.5-million appropriation—which would be tacked onto the 1955 fiscal year budget, ticketed for necessary census studies.

But no one can guess (even with the strongest Administration backing) what will happen when the request gets into committee hearings.

If any additional testimony is needed, however,—as to the disarray into which government statistics have fallen—industry will be quick to rally. Even before the Watkins report, questions were being posed by chemical men about unemployment, construction, inventories, consumer spending and foreign trade that couldn't be answered in Washington.

When everyone was riding on the

crest of an economic wave of prosperity, such information wasn't of prime importance. Federal statistics were accepted casually, as happy proof of what everyone knew anyway—that the economy was doing very well. But now businessmen are discovering that the fact-gathering programs laid out before the Korean War are inadequate for present needs.

Why? Industry's fault-finding falls into three basic categories.

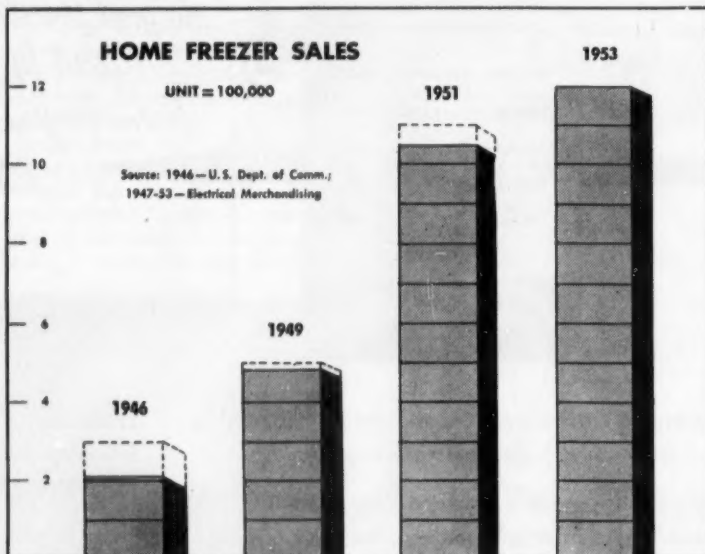
- The economy has simply grown away from its statistical guideposts.

- We're asking more of our statistics now; the task of private decision-making has been enormously complicated by technological change, population growth, market shifts.

- Ideas for improvement of government statistics have been allowed to die either in the Budget Bureau or in Congress.

There's no doubt that funds will have to be allocated for basic census studies, if the situation's to be rectified. But just when and how far Congress will move is a moot question . . . the answer to which chemical men await—with growing impatience.

## IMPACT



## Still a Sleeper?

CLIMBING hand-in-hand with the boom in home freezer sales in the U.S. is a virtually unheralded new market for chemical producers. Taken in unit figures (where an 11-cu.-ft. freezer is accepted as average size), chemical consumption doesn't sound impressive, is

estimated by one freezer producer at 6.5 lbs. of porcelain enamel, 0.47 gal. of enamel paint, 20-25 oz. of refrigerant, and by another (who doesn't use porcelain enamel at 5.0 pints of enamel paint. But in terms of 1.2 million freezers, this looms as a potential chemical bonanza.

20° and 22° Baumé Water White  
and Commercial Grades Avail-  
able in Tank Car Quantities from  
Niagara Falls, New York

20° Baumé Commercial Grade  
Muriatic Acid is also available  
for prompt tank car ship-  
ments from Carlsbad, New  
Mexico.

### specifications

#### 20° and 22° Baumé Water White Grade

COLOR.....WATER WHITE  
IRON.....0.0001% MAXIMUM  
FREE CHLORINE.....NONE  
ARSENIC.....NONE  
INORGANIC SALTS..0.010% MAXIMUM  
SULFATES.....0.001% MAXIMUM  
ORGANIC MATTER.0.0002% MAXIMUM  
SUSPENDED MATTER.....NONE

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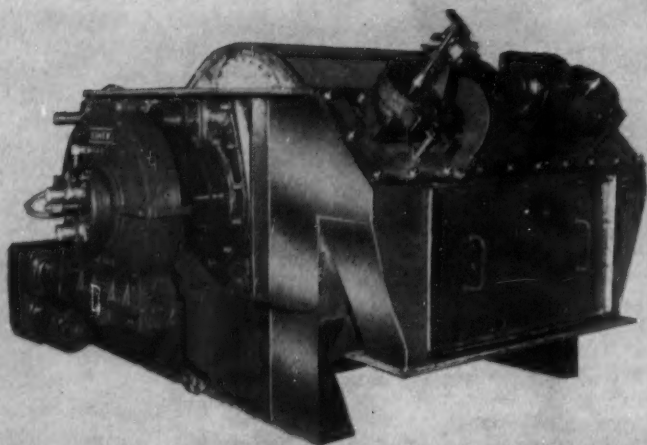


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B & I . . . . .



PICKUS: "Most executive development programs . . . too general."

## **Too Broad, Unrealistic**

Executive development programs, always a topic of vital interest to chemical men, cramped for top-flight talent, were roundly chided at last week's meeting of the Synthetic Organic Manufacturers' Assn., by Morris Pickus, president of The Personnel Institute, Inc. His objections: most development programs are too general, fail to take into account the all-important factor of human motivation, can't be measured in terms of achievement.

Suggested as the prime requisites of any realistic management program: to impress executives with the need for job-performance improvement ("no one goes to a doctor unless he thinks he's sick"); individual approach ("just as a good doctor writes out a self-specified prescription"); a good follow-through system ("to see that the executive takes his two self-improvement pills each morning"); and an obvious method of evaluating results in dollars and cents.

## **LEGAL . . . . .**

**Product Liability:** A constant headache for makers of drugs, cosmetics and other consumer goods is the threat of damage suits—it seems that there's no chemical that somebody somewhere isn't allergic to; and frequently premiums for product liability insurance border on the prohibitive. Two new suits of this nature appeared in the courts last week:

- In Cincinnati district court, attorneys for Jean Milan filed a \$25,000 damage suit against Ciba

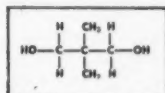
# consider these derivatives of isobutyraldehyde

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## FOUR NEW EASTMAN INTERMEDIATES

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All are currently available in pilot plant quantities. Write to Eastman Chemical Products, Inc., Chemicals Division, Kingsport, Tennessee for a sample for your own evaluation.



neopentyl glycol (2,2-dimethyl-1,3-propanediol)

Form

Color

Boiling Range

Melting Point

Purity

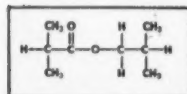
Crystalline Solid

White

128°-135°C/3 mm.

121°-126°C

97% minimum



isobutyl isobutyrate

Color, APHA

Ester Content

Boiling Range

Specific Gravity, 20°/20°C

Acidity, as isobutyric acid

Refractive Index,  $n_D^{20}$

15 maximum

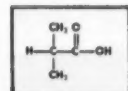
98% minimum

146°-148°C/760 mm

0.850-0.860

0.5% maximum

1.3930±0.001



isobutyric acid

Color, APHA

Specific Gravity, 20°/20°C

Isobutyric Acid

Water

Boiling Range

Refractive Index,  $n_D^{20}$

10 maximum

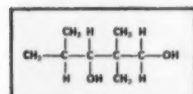
0.942-0.956

98% minimum

0.2% maximum

95° 152°-154°C/760 mm

1.3930±0.001



2,2,4-trimethyl-1,3-pentanediol

Form

Color

Boiling Range

Melting Point

Purity

Crystalline Solid

White

109°-111°C/4 mm.

49°-51°C

95% minimum

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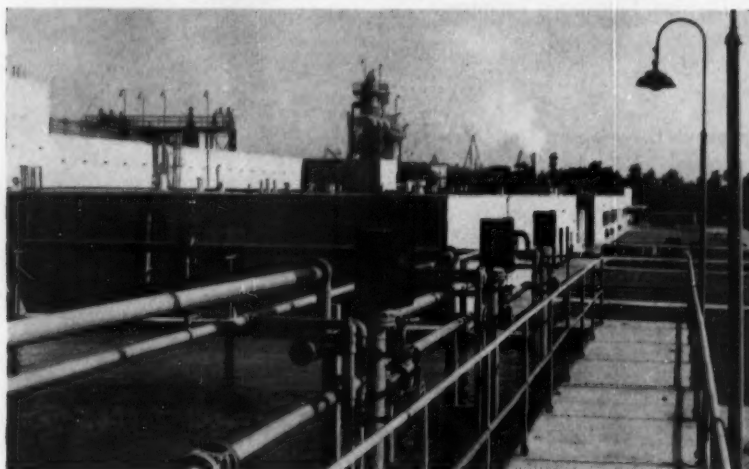
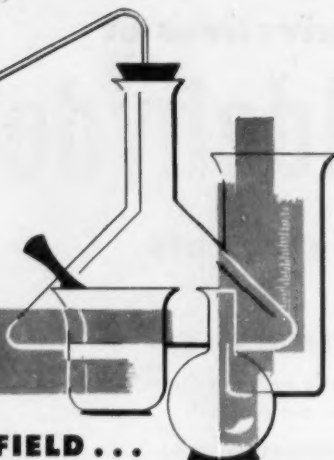
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B & I . . . . .

Pharmaceutical Products of Summit, N. J. The complaint: that she lost 15 weeks' work and suffered great pain following application of a Ciba-made ointment to a skin rash.

• A second suit against Clairol, Inc., Stamford, Conn., turned up in federal court at New York. Margaret F. Rooney of Arlington, Va., is asking \$6,000, claiming that use of an oil shampoo tint caused her hair to become copper-colored, and to fall out.

**Patent Disputes:** Two chemical-process patent suits advanced another step or two in U.S. District Court, New York, last week.

• Harold Levey, holder of patent 2,045,328 on production of continuous film from plastic material, wound up his infringement suit with out-of-court settlements, terms not disclosed. Last of the five corporate defendants to stipulate a dismissal order was Monsanto; each party will bear its own court costs.

• A tentative triumph for Minnesota Mining & Mfg. Co. and a slight setback for Technical Tape Corp. in their scrap over pressure-sensitive transparent tape (*CW, Feb. 13*) was the opinion by Chief Judge John Knox denying three motions asked by Technical Tape. Noting that the two companies' Chicago civil suit may be tried in April, Knox refused to postpone action in that suit or to give preference to the 1953 suit in New York. He also declined to postpone a separate trial of the 1951 suit in New York.

**Strict on Stamps:** To Bristol-Myers



**DRUG MAKER BRISTOL:** Not even a little stamp escapes fair-trader's eye.



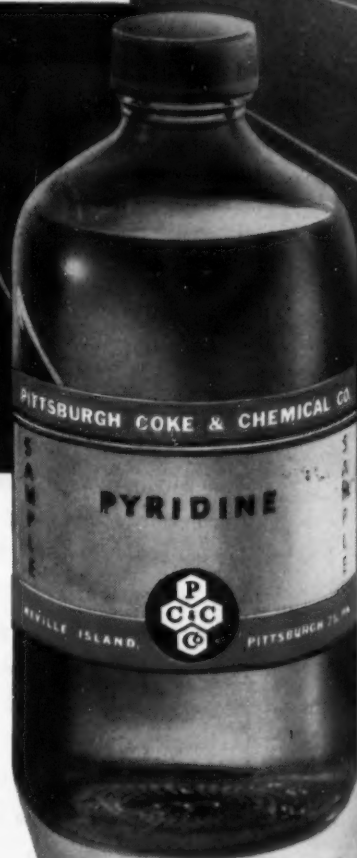
# PITTSBURGH PYRIDINE

*the Chemical with a Future*

AS AN  
ACID ACCEPTOR

AS A  
BUILDING BLOCK

AS A  
VERSATILE SOLVENT



## How can you use it to improve your product or process?

Did you know that Pittsburgh Pyridine is an extremely valuable material for improving your pharmaceutical products and processes? Here's how it can work for you:

**As a Building Block:** Pittsburgh Pyridine's derivatives exhibit unusual biological activity, surface activity, and buffering activity as well as special adhesion and solubility characteristics.

**As an Acid Acceptor:** Pittsburgh Pyridine possesses remarkable acid accepting properties, but it will not affect many fine chemicals that might be attacked by caustic neutralizers.

**As a Versatile Solvent:** Soluble in both water and organic materials, Pittsburgh Pyridine produces cleaner separations and purer end products.

Pittsburgh Pyridine was used to produce some of the first sulfa drugs and vitamins. And, after a period of scarcity, it is again available in unrestricted quantities, largely because Pittsburgh has doubled its production. Pyridine is a material worth studying in *your* laboratory. Additional data and samples will be sent upon request.



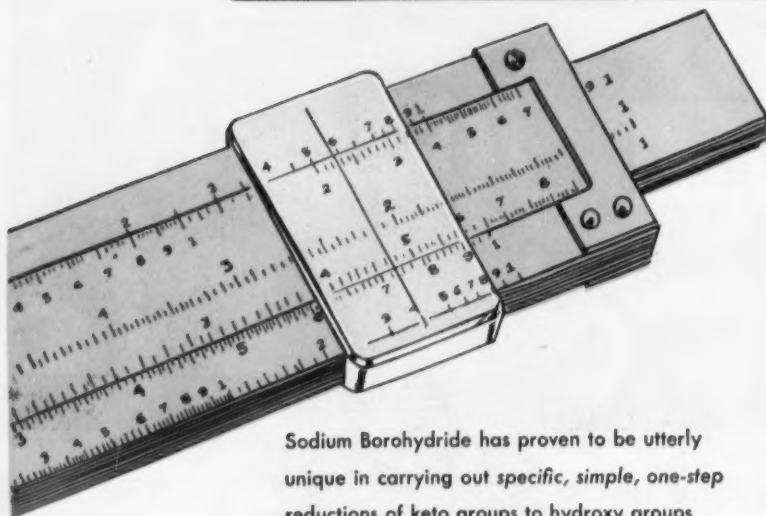
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the  
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Sodium Borohydride has proven to be utterly unique in carrying out *specific, simple, one-step* reductions of keto groups to hydroxy groups swiftly, safely and easily.

Metal Hydrides' Sodium Borohydride often makes possible desired molecular configurations otherwise unobtainable, and may be used safely at room temperature.

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B & I . . . . .

Co., a "fair-trade" price is something that mustn't be shaved directly or indirectly. Even the offering of an "S&H Green Stamp" with purchase of a Bristol-Myers drug product makes that company see red. Position of Bristol-Myers Pres. Lee Bristol in a test case at Roanoke, Va., is that the company's fair-trade agreements require that products not be sold below a minimum price or in combination with other items, including bonus stamps. The defendant, Garland's Drug Stores, contends that use of Green Stamps is a form of advertising: the customer saves these stamps and then may exchange them for merchandise prizes.

LABOR . . . . .

**Washington Scene:** The nation's capital has been teeming with labor news of significance to the chemical industry this week. In addition to the National Labor Relations Board's decision in the American Potash case (CW, March 13), these developments were noted:

- Albert Beeson, formerly industrial relations director of Food Machinery & Chemical Corp., was sworn in to serve as an NLRB member until December.

- J. Ernest Wilkins, attorney, former president of the Cook County (Chicago) Bar Assn., and until now a member of the Government Contract Committee set up by President Eisenhower last fall to prevent racial discrimination in plants with federal contracts, has been nominated for the office of Asst. Secretary of Labor. Believed to be the first Negro to be named to near Cabinet rank, Wilkins



**LABOR'S WILKINS:** For U.S. industry, a sentinel on discrimination.

# No dirt, no scale, no grease... No product contamination!

## U.S.S. STEEL DRUMS are CLEAN!



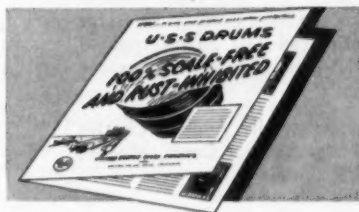
**Here's the inside story** on sure product protection. When the inside of an ordinary drum is wiped with a clean cloth, it will pick up grease, dirt, scale and rust. But when the inside of the U.S. Steel Drum is wiped, the cloth is still perfectly clean!

**W**HEN you use USS Drums you are assured that your product will not become contaminated by scale, dirt, or grease because these materials have been completely removed from the drum. As a result, you can make substantial savings as customer claims caused by product contamination disappear. This is better for you . . . and better for your customers.

In addition, the physically and chemically clean surface of a USS Drum is protected by a tightly adherent phosphate coating which retards rust and corrosion. Therefore, USS Drums give you maximum

product protection plus an attractive long-lasting finish.

So for the protection of the products you ship . . . and for long-lasting drums . . . be sure you get scale-free, rust-inhibited USS Drums the next time you order.



U.S. Steel Products fabricates stainless, galvanized, tinned, painted, and decorated drums and pails furnished in capacities from 2½ to 110 gallons with a variety of fittings and openings to fit your particular requirements.

### WRITE FOR FREE BROCHURE

For further information on this quality drum and the new process that puts a stop to product contamination write to our New York office for the free brochure "USS Steel Drums—100% Scale-Free, Rust-Inhibited."

*"It's Better to Ship in Steel"*

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UNITED STATES STEEL CORPORATION

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UNITED STATES STEEL



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**ACTIVITY** in the United States is in MONON'S territory. For example, it grows 25% of the tomatoes used in processing. This extensive agricultural activity necessitates great usage of fertilizer, and today more than 25% of the fertilizer produced in the United States is consumed in the area served by the MONON.

### ***This concentrated agricultural area is a ready market for manufacturers of INSECTICIDES, FERTILIZERS, AND AGRICULTURAL CHEMICALS***

Several cities and towns along the MONON are tailor-made for fertilizer plants. Investigation will show you why these natural resources of Indiana in MONON territory have definite value for you. For example, there are an estimated 110 billion tons of limestone deposits on the MONON with 50 active limestone mines in daily production in Indiana.

Write and let us give you the interesting details. Address Charles C. Dawes, Manager, Industrial and Agricultural Dept., Monon, 608 South Dearborn Street, Chicago 5, Illinois.



## **MONON**

**THE HOOSIER LINE**

**CHICAGO - INDIANAPOLIS AND LOUISVILLE RAILWAY COMPANY**

## **B & I. . . . .**

is expected to keep a watchful eye on employment practices in U.S. industry.

• NLRB's main job—judging complaints from management and labor on alleged unfair labor practices—would be shifted to the federal courts under a Taft-Hartley law amendment that was recommended by a 14-13 vote of the House of Representatives labor committee. This move was quickly opposed by Secretary of Labor James Mitchell, who said the proposed change "would hamper rather than help" the handling of labor disputes. At least one of the congressmen voting for the amendment is known to be in favor of killing the Taft-Hartley law altogether.

• **'Pretty Stiff':** Strikes are fewer, but there's still nothing torpid about labor relations at the nation's atomic energy plants. At Paducah, Ky., the United Gas, Coke & Chemical Workers (CIO) will try this week to talk Carbide and Carbon Chemicals Co. into granting a "pretty stiff" blanket wage increase. At Oak Ridge, Tenn., the approximately 650 AFL sheetmetal workers who had been on strike last November over travel pay staged a two-week walkout as a protest of the discharge of 22 men whose work, according to the subcontracting Kaighen & Hughes Construction Co., was "unsatisfactory."

• **Layoffs Compared:** Whether you call it "readjustment" or "recession," it's true that there have been some layoffs in chemical and other manufacturing industries; but is there an abnormal increase in the number of layoffs?

Latest figures from the Bureau of Labor Statistics, showing that the number of layoffs per 100 workers in the chemical industry rose from 0.6 in December to 1.3 in January, at first seem to suggest that our industrial economy is turning a corner. But it happens that there were similar increases in January of the two preceding years. Chemical industry total separation rates for those periods:

|                 |                |
|-----------------|----------------|
| Dec. 1951, 1.7; | Jan. 1952, 2.5 |
| Dec. 1952, 1.5; | Jan. 1953, 2.4 |
| Dec. 1953, 1.3; | Jan. 1954, 2.5 |

However, layoffs are considered a "newsy" topic this season; layoff of 90 workers at the Electro Metallurgical plant in Cleveland drew a three-column, large-type headline in a local newspaper. (Total layoffs at that plant in recent months: 260. Present plant force: 800.) And people affected by layoffs are letting Washington know about it:

# BIG PROFIT OPPORTUNITY IN LIQUID DETERGENTS

## STEPAN Complete Line of Liquid Detergent Bases Helps Soapers Cash-In

From heavy-duty floor cleaners to bubble bath specialties . . . from textile scouring compounds to milady's creme shampoos, there are Stepan liquid detergent bases and finished formulations available to help you develop your own product.

Included in the Stepan line of liquid detergent base materials are the new higher fatty alcohols and fatty alcohol sulfates important for superior detergency and mildness to the skin in such products as liquid dishwashing detergents, heavy-duty household detergents and other detergents in either liquid, solid, or flake form.

The completeness of the Stepan line of base materials makes it possible for you to select just exactly the correct ingredients for blending to your use and price requirements.

Why not let Stepan materials, facilities, and experience help you to capitalize on the big and growing liquid detergent market?

### Liquid Alkyl Aryl Sulfonates

The Stepan line includes a variety of liquid alkyl aryl sulfonates offering economical sources of active ingredients and tailored to meet various price and end use requirements. Among these products and of special interest are DS-60 and DS-35 de-salted sodium alkyl aryl sulfonates. In addition to their uses as a liquid dishwashing detergent base, these products are ideal as bases for scrub soaps, dairy cleaning compounds, or any other cleaning compound which requires the combination of economy, superior detergency, and superior wetting action.

### Non-Ionic Detergents and Foam Stabilizers

Stepan LDA, an alkylolamide, provides exceptional foam sta-

bility and is highly recommended for use in alkyl aryl sulfonate and fatty alcohol sulfate formulations where high foam stability is desired.

**Amides**—Stepan can also produce special amide type non-ionics to your own specifications. Our large production capacity may well effect important savings to you on products of this type.

### Sulfated Alcohols

**Lauryl Sulfates**—An extremely wide range of sodium, ammonium, potassium, and triethanolamine lauryl sulfates are available for detergent and other uses. These are obtainable in paste, liquid, or powder forms and are unmatched for purity and uniformity.

**Higher fatty alcohol sulfates**—These new products in the Stepan line offer excellent detergency and

the additional advantage of low de-fatting to the skin. They are ideal for use in shampoos, heavy-duty household detergents, and other detergents in liquid or solid form.

### Savings Through Stepan Blending Service

The completeness of the Stepan line can also make possible consolidated raw material buying. This, in combination with Stepan's extensive blending facilities, can effect important savings for you.

Carload total of less than carload ingredients, where suitable, can be blended at small additional cost and carload price savings effected on the individual items.

### Laboratory Assistance

The Stepan Chemical Company has had over twenty years experience in the field of synthetic detergents. This experience and the new Stepan laboratory facilities are available to help you in developing and producing your detergent product.



20.2% of the market in four years is the record for a liquid dishwashing detergent in one major city. It now outsells all other dishwashing products in that market. Synthetic detergents as a whole have captured better than 50% of the market, nationally. Stepan Chemical Company has a complete line of liquid detergent bases and finished formulations to help soapers profit from this growing market. Many of these base materials are also advantageous for use in solid, flake, or paste form detergents.

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# SAFE

storage for your product

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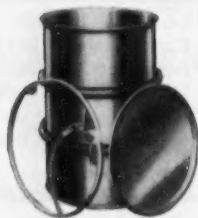
# REPUBLIC

## BARRELS AND DRUMS OF ENDURO®

### STAINLESS STEEL



Solid or tight head drum above and patented Ringlox removable head drum shown below are but two of many styles available in the complete Republic line.



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Pressed Steel Division  
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# REPUBLIC

## METAL BARRELS AND DRUMS



● ENDURO Stainless Steel in Republic Barrels and Drums gives you proved protection against product contamination. It neither affects nor is affected by most chemical and food products. And when you put your product in ENDURO Drums and Barrels, you can expect to save plenty on maintenance costs! ENDURO is tough and strong—it resists rough use and abuse indefinitely—resists corrosion—never has to be painted—is so easy to clean.

Reduced maintenance and longer service life actually make the greater product protection of ENDURO available to you in Republic Barrels and Drums on an economical basis. Many styles to choose from in sizes to 55 gals. Write for further information.

\* \* \*

Other popular Republic containers in the chemical and food field are Lacquer-Lined Steel Barrels and Drums. Durable Lacquer Lining is neutral to a broad range of chemical and food products. Lacquer-Lined Barrels and ENDURO Stainless Steel Barrels both furnished with or without standard bungs. Also hot dipped galvanized or hot dipped tinned.

## B & I . . . . .

● With half of Illinois' 2,000 fluor-spar miners reported unemployed and another 500 expected to be laid off this month, Gov. William Stratton has decided to ask Congress for more protection for this industry, either in higher tariff rates or through import quotas.

● Pres. Elwood Swisher of CIO Gas, Coke & Chemical Workers telegraphed to the White House: "Increasing unemployment (of Gas-Coke members) confirms economists' analyses of a deepening recession in the American economy." He suggests: increase unemployment compensation benefits, raise minimum wage, set personal income tax exemption at \$1,000.

## FOREIGN . . . . .

**Sulfuric Acid/Chile:** The Sali Hochschild Mining Co. has received permission from the Chilean Ministry of Mines to import—duty-free—equipment necessary to build a 20 metric ton/day sulfuric acid plant at Copiapo, Chile. It's reported that U. S. firms will be invited to submit bids within the next few weeks.

● **Cellulose/Sweden:** Scania's Cellulose Corp., Kristianstad, Sweden, will build a pulp factory in southern Sweden with a capacity of 17,000 tons of pulp yearly. Cost of the plant: \$6.8 million.

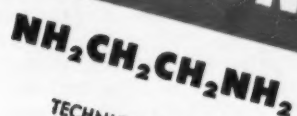
● **Paint, Varnish/Switzerland:** Turnover of the Swiss paint and varnish industry during the last quarter of 1953 dipped downward slightly. The decline is attributed in part to smaller demand from the building trade, in part to the impact of foreign (mainly U. S.) imports.

● **Copper/Chile:** A special cabinet meeting of the Chilean government—called to consider the request of two large U. S. copper companies to reduce production—has been rejected. Involved in the request: Chile Exploration Co., Anaconda Copper Co. subsidiary, which wanted authorization to cut personnel and production by 30%; and the Kennecott Copper Corp.'s Braden Mine, which sought permission to cut both personnel and production by 31%. Reason: lack of demand for copper. Under Chilean law, mining firms need permission from the government prior to laying off large numbers of employees.

● **Salt/Peru:** Salt Chemicals, Inc., New York, has signed a contract with the Peruvian government to build a 24-



# ETHYLENE DIAMINE



TECHNICAL GRADE

75-78%

INTERESTING  
FOR THE

*chemical angler*

|                                      |                         |
|--------------------------------------|-------------------------|
| Appearance .....                     | Colorless Liquid        |
| Active Ingredient .....              | 75-78% Ethylene Diamine |
| Specific Gravity at 20/20°C .....    | 0.961-0.970             |
| Boiling Range .....                  | 115-122°C               |
| Color—APHA (Maximum) .....           | 25                      |
| Flash Point (Open Cup Approx.) ..... | 150°F                   |
| Weight Per Gallon .....              | 8.03 Pounds             |

## USES

Ethylene Diamine is an important chemical intermediate and has proved its usefulness in the following applications: Synthesis of chelating agents; production of synthetic resins, rubber chemicals, synthetic waxes, pharmaceuticals, fungicides and insecticides, inhibitors and surface active agents. It can also be used as a solvent, stabilizer, and alkalinity control agent.



For a sample or more detailed  
information, please write . . .

**MATHIESON CHEMICAL CORPORATION**  
Mathieson Hydrocarbon Chemicals Division  
Baltimore 3, Maryland

1966

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There are many vital business assets which are not insurable under any conditions. In fact, some of them are not replaceable at any cost. Safeguarding life, property, equipment, customers, public confidence and profits is worth many times the cost of ENGINEERED "Automatic" Sprinkler FIRE PROTECTION. It's well to remember that what's worth insuring is worth protecting!



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CORPORATION OF AMERICA  
YOUNGSTOWN, OHIO  
Offices in principal cities of  
North and South America

#### B & I . . . . .

ton/day salt refining plant in Peru. Cost: \$500,000. Some 75% of the equipment and machinery necessary for construction will arrive in Peru this month; the plant's expected to be running by June. The project's calculated to solve a perennial salt shortage in Peru, where present rate of production hovers around 2 tons/day.

**Nitrates/Chile:** Determined to wait "until the Chilean economy is de-controlled," Anglo-Lautaro and Compañía Salitrera de Tarapáca & Antofagasta (the two major nitrate-producing companies in Chile) have shelved future expansion plans. Reason (according to company spokesmen): the chemical industry in Chile is in a state of crisis—thanks to a policy whereby the two viable industries (copper and nitrates) are penalized in order to foot the bill for launching new chemical ventures. Anglo-Lautaro had planned to expand this year at a cost of \$14 million; Cia ST&A was considering an \$11-million loan from the Export-Import Bank to modernize, expand. But now all plans are off indefinitely, pending a change of heart at government levels.

#### KEY CHANGES . .

**J. Sinclair Marks**, to assistant treasurer, Davison Chemical Corp., Baltimore.

**Thomas Dudley Cabot**, to president, Godfrey L. Cabot, Inc., Boston.

**Theodore A. Haschke**, to director of sales, Industrial Chemical Div., Stauffer Chemical Co., New York.

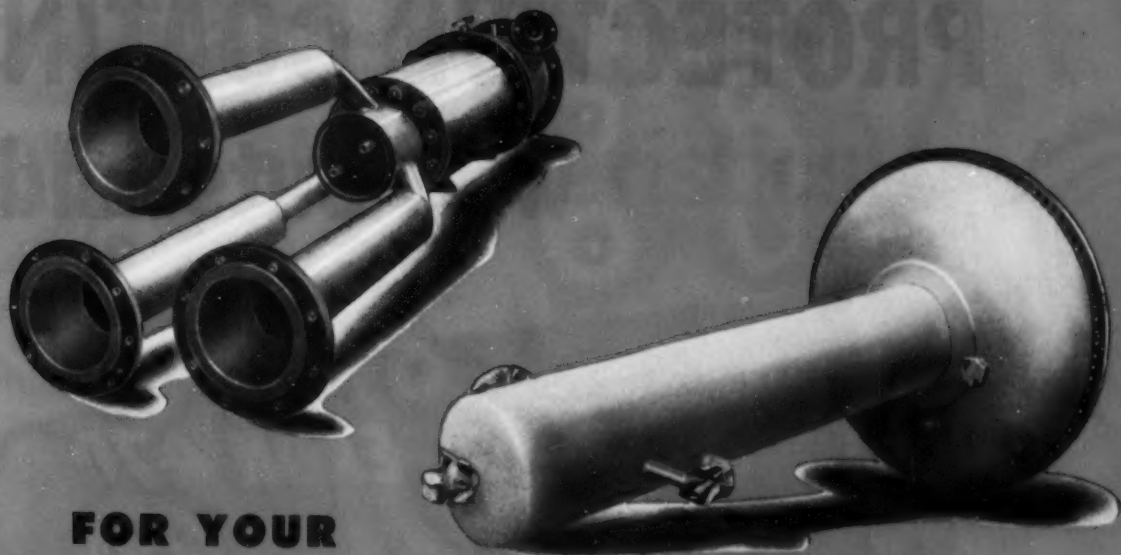
**D. C. R. Miller**, to general manager, Dow Corning Silicones, Ltd., Toronto.

**William N. Williams**, vice-president, Food Machinery and Chemical Corp., San José, Calif.

**F. L. Stark**, to manager, Agricultural and Mining Chemicals Dept., V. V. Lindgren, to manager, Plastics and Resins Dept., A. R. Davis, to manager, Rubber Chemicals Dept., W. H. Horne, to manager, Process Chemicals Dept., N. H. Marsh, to manager, Synthetic Fibers Dept., Stamford Research Laboratories, American Cyanamid Co., Stamford, Conn.

**John H. Bahlburg**, to manager, New Products, Organic Chemicals Dept., Michigan Alkali Div., Wyandotte Chemicals Corp., Wyandotte, Mich.

**Kenneth H. Allen**, to director of purchases, Stauffer Chemical Co., New York.



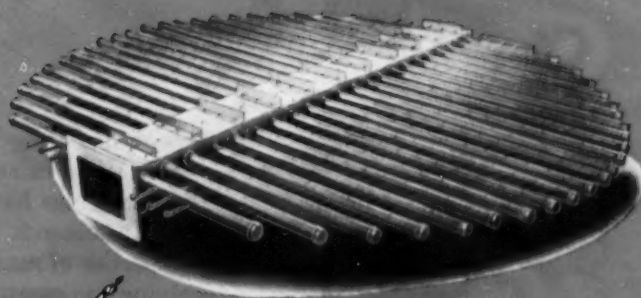
**FOR YOUR**  
*Specialized Equipment*

**NEEDS . . .**

For towers, heat exchangers, pressure vessels and special piping — designed and manufactured to meet your particular requirements — place your confidence in the Vulcan Manufacturing Division.

With over a half-century experience in the specialized building of heavy, metal-fabricated custom-built equipment for the chemical and process industries, Vulcan today stands uniquely ready to meet your special equipment needs. Our engineers, designers, and production experts are thoroughly experienced in studying special equipment problems with a trained eye for engineering quality and manufacturing economy.

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# PROTECTIVE COATINGS with outstanding

## Firestone **EXON 470**

combines the properties  
of many resins!

- EXCELLENT SOLUBILITY  
IN METHYL ETHYL KETONE
- HIGH DEGREE OF SOLUBILITY IN  
AROMATIC HYDROCARBONS
- ADHESION TO METALS
- ADHESION TO ALKYD SURFACES
- ALKYD COMPATIBILITY
- ADHESION TO VINYL SURFACES
- EXCELLENT PIGMENT DISPERSION  
PROPERTIES



Newest addition to Firestone's family of resins is EXON 470... Its possibilities and opportunities for protective coatings have been developed by exhaustive research.

It combines the best properties of many resins used in this field—giving you greater-than-ever efficiency and economy of production. It helps you deliver a better-performing product through the use of one rather than a combination of several resins

that protective coatings previously required.

Review the unprecedented combination of properties EXON 470 provides listed above.

From Firestone's laboratories have come a succession of new and important resins for innumerable applications and industries. More will be announced . . . because Firestone resin research is producing an ever-growing EXON line, bringing industry shorter cuts to finer products.

# get a brand NEW resin solution characteristics!

## Firestone EXON 470

**NOT TO MENTION**... abrasion  
resistance... acid resistance... alkali resist-  
ance... fast baking... medium fast drying...  
flexibility... oil and grease resistance... out-  
door durability... salt-spray resistance... water  
resistance... low moisture vapor permeability.

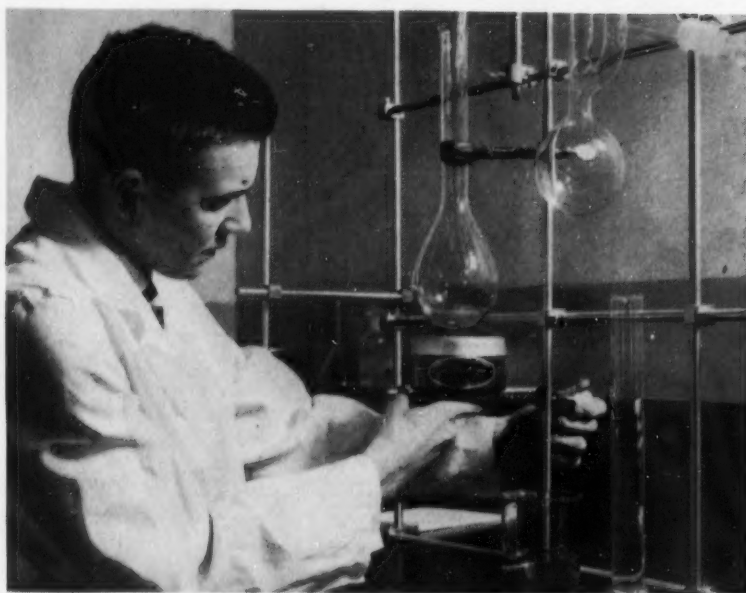


*For complete information  
or technical service write or phone*

### **CHEMICAL SALES DIVISION**

*Firestone Plastics Company, Dept 22H, Pottstown, Pa.*

*Division of The Firestone Tire & Rubber Co.*



APPARATUS DEVELOPMENT: Flasks and mixers pay the freight.

## Harnessing the Workhorses

Research in the laboratory apparatus business is booming; here's the big picture, a rundown of the new products that effort is bringing forth.

They used to say that a chemist wasn't worth his salt until he could make his equipment with a piece of glass, a ball of string, and a lump of sealing wax. Today a laboratory toiler's best friend is apt to be his apparatus catalog; even if he had the skill and experience (which many have) to fabricate special apparatus, it wouldn't be worth his time and effort.

For the most part, the "do it yourself" days have been relegated to memory by the costly and exacting equipment demands of modern scientific research, development and process control. Laboring to satisfy those demands is an industry that netted more than \$150 million\* from the sale of laboratory apparatus in 1953.

With an enterprising eye on a bigger piece of the industry total, Central Scientific Co. this week was readying its new Chicago research laboratory. Built at a cost of \$100,000, this research development and engineering center spotlights some plain facts concerning the broad scientific apparatus and instrument business (of

which lab apparatus is just one facet).

One of its own best customers, the apparatus and instrument industry

was investing an average of 6%, or better than \$91.4 million,† for research in 1951, when the over-all industrial average stood at about 2%. Some apparatus makers, Alfred Bicknell Associates (Cambridge, Mass.) and Fisher Scientific Co. (Pittsburgh), for instance, sink as much as 20¢ of every sales dollar into research.

Moreover, in 1951, the apparatus industry employed more than 13,400 technically trained researchers, about 7% of the total research personnel employed by companies reporting to the Bureau of Labor Statistics. More recent comprehensive figures aren't available yet but there's no reason to believe that the balance on either score has shifted appreciably.

Under normal circumstances, about 10-15% of these resources are spent researching the workhorses (flasks, mixers, rods, clamps, stands, etc.) of the laboratory apparatus line. The remainder is mobilized in studies of more complicated electronic, optic, nucleonic, etc., devices.

At intervals, however, this split is upended. To keep pace with its competitors, every company periodically revises its standard line. One firm, for example, is now expending 75% of its research effort on the "workhorses," plans to launch an entire new line of ovens, stands, rods, clamps, burners, flask heaters, etc. The new line, of

† Based on a Bureau of Labor Statistics survey.



NUCLEONIC PROBE: A place for more complicated studies.



\* An estimate in the light of 1953 net sales of \$132 million by lab apparatus manufacturing firms affiliated with Scientific Apparatus Makers Assn. Member firms comprise, roughly, 70-75% of their industry.



| INORGANIC ACIDS      | BAKER OFFERS |
|----------------------|--------------|
| Boric Acid           | R            |
| Hydrochloric Acid    | PR           |
| Hydrofluoric Acid    | R            |
| Molybdic Acid        | PR           |
| Nitric Acid          | TPR          |
| Phosphoric Acid      | PR           |
| meta-Phosphoric Acid | PR           |
| Silicic Acid         | PR           |
| Sulfuric Acid        | PR           |
| Tungstic Acid        | R            |

**KEY TO CHART**

T—Technical Quality  
P—Purified, U.S.P.,  
or N.F. Quality  
R—Reagent Quality

 Carloads  
 Tonnage

| ORGANIC ACIDS        | BAKER OFFERS |
|----------------------|--------------|
| Acetic Acid          | R            |
| Acetylsalicylic Acid | P            |
| Lactic Acid          | PR           |
| Nicotinic Acid       | P            |
| Salicylic Acid       | PR           |
| Tannic Acid          | PR           |

| ACID ANHYDRIDES     | BAKER OFFERS |
|---------------------|--------------|
| Arsenic Pentoxide   | TR           |
| Molybdenum Trioxide | R            |

Appropriate color designations and symbols indicate those chemicals we can supply in carloads, those in tonnage lots, and the quality grades available.

## ACIDS

## A quick reference chart to speed your selection of Baker Acids

### Other Available Baker Industrial Chemicals of Measured Purity

HEAVY  
METAL  
COMPOUNDS

LIGHT  
METAL  
COMPOUNDS

Write for complete list of Fine  
and Industrial Chemicals.

How often have you wished to have at your fingertips a quick reference chart of the acids produced by J. T. Baker Chemical Co. on a tonnage basis? This chart is now available.

This reference guide defines for you the various acids and acid anhydrides that we regularly supply to industry for production purposes. Many additional acids are produced for special use, or to the customer's specification.

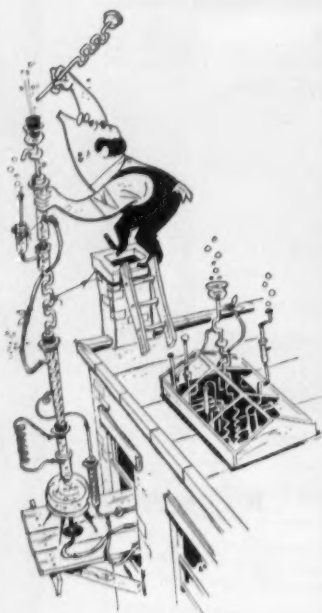
When you need process chemicals, you want to buy from basic sources of supply. Be sure to consider Baker. Here at our plant at Phillipsburg we have modern, continuous distillation facilities, unit process plants, and batch equipment, which enable us to supply your industrial chemical requirements economically and to precise standards.

Please let us quote on your requirements. Address your inquiry to: J. T. Baker Chemical Co., Executive Offices, Phillipsburg, N. J.

# Baker Industrial Chemicals

*"Purity by the ton"*





Looking for a  
**Rare** organic  
 in larger-than-  
 laboratory amounts?

● It's easier to ask Eastman  
 to make it for you!

Extensive facilities and wide experience in the preparation of over 3500 Eastman Organic Chemicals for research and analytical work can serve you with compounds hard to find on the market in quantity. We shall be glad to discuss your requirements with you.

Write or wire *Distillation Products Industries*, Eastman Organic Chemicals Department, Rochester 3, N. Y.



**DISTILLATION PRODUCTS INDUSTRIES**  
 is a division of  
**EASTMAN KODAK COMPANY**

## RESEARCH . . . . .



**OPTICS RESEARCH:** It gets a prepaid ride.

course, will be expected to last for upwards of 10 years.

Some firms, E. Machlett & Son, for one, do not maintain research facilities, rely upon outside scientific talent for product development. An inventor may take his idea to Machlett (New York) for appraisal; if the invention is commercialized, he receives royalties. The company's Deminac ion-exchange water demineralizer is the result of such an arrangement.

Here's a distilled roundup of what other laboratory apparatus makers are doing, the new products this work is yielding:

- Fisher Scientific Co.'s research is directed chiefly toward improving standard laboratory equipment. Typical new items: a magnetic stirrer (less than 2 3/4 in. high, only 4 1/4 in. in diameter) that's designed for the close quarters of organic synthesis setups; a vibrating spatula for speeding up the weighing of powdered materials; and a vibrating stirrer. Other new or improved equipment in the works include a new grease-tester for the oil and petroleum industry, a single balance scale for atomic research, and an automatic titrimer for beer companies.

- Central Scientific Co.'s products formerly were largely confined to the field of physics. But the company now is amplifying its operations in chemistry, electronics, and atomic energy. One of its new instruments, called the Cenco Beta Ray H/C Meter, measures the percentage hydrogen and carbon-hydrogen ratio in liquid hydrocarbons by a process that utilizes beta rays. Source of the radiation: strontium 90.

- E. H. Sargent & Co. (Chicago)

probes analytical instruments—polarographs, oscillometers, micro combustion trains, and electrolytic analyzers. Its new thermistor\* actuated temperature regulator called the "Thermomitor" is Sargent's answer to temperature control for baths.

- The Emil Greiner Co. (New York) concentrates on thermometers, hydrometers, blown glassware, gas analysis apparatus, thermo-regulators, and laboratory electrical appliances. A standout result of their research is the new Gilmont ultramicroburet popular for atomic energy research where the handling of exceedingly small quantities of reagents is commonplace. Commercial models of this buret have a sensitivity as low as one millionth of a milliliter.

- Metalab Equipment Corp. (Hicksville, N. Y.) specializing in laboratory furniture, has developed a new design for laboratory cabinets, which permits interchangeability of doors, drawers, etc. Changeovers are made using common tools such as screw drivers and hammers.

- Clay Adams Co., Inc. (New York) has recently stepped up its research on centrifuges, hemometers, hemacytometers, pipettes, rotators and shakers. Result: two new improved variable speed rotators for agitating serological samples

- Ever Ready Thermometer Co.'s (New York) new tank thermometer, features a plastic sample cup. Previous models have a metal cup that allows more temperature variation in the sample.

- Hellige, Inc., (Garden City,

\* Thermistors are metal oxide conductors that have very large negative thermal coefficients of resistance. This property renders them especially valuable in temperature measuring instruments.

DOUBLE CHECKED   
FROM RESEARCH TO INDUSTRY

# SHARPLES SECONDARY AMINES

VERSATILE INTERMEDIATES FOR THE CHEMICAL INDUSTRY

**Diethylamine**  $(C_2H_5)_2 NH$

**Dipropylamine**  $(C_3H_7)_2 NH$

**Diisopropylamine**  $[(CH_3)_2CH]_2 NH$

**Dibutylamine**  $(C_4H_9)_2 NH$

**Diisobutylamine**  $[(CH_3)_2CHCH_2]_2 NH$

## DIISOPROPYLAMINE

$[(CH_3)_2CH]_2 NH$

A catalyst in some reactions--

- Where a strongly basic volatile catalyst is indicated.
- Where other amine catalysts will be consumed by the reactants.
- Where easy separation of the catalyst from the reaction mass is desirable
- Because it is sterically hindered (for example, Diisopropylamine requires 50°C. higher temperature and correspondingly higher pressure for reaction with ethylene oxide than does diethylamine)

### AMONG RECENT APPLICATIONS OF SECONDARY AMINES ARE THE FOLLOWING:

**DIETHYLAMINE** contributes to the fractionation of chlorinated hydrocarbons

**DIETHYLAMINE** an activator in the polymerization of rubber-like materials.

**DIETHYLAMINE** reacted with an organic lubricating material to form stable, high temperature lubricating greases.

**DIISOPROPYLAMINE** Nitrite was found to be a good corrosion inhibitor in nonflammable hydraulic fluids.

## SHARPLES CHEMICALS Inc.

A SUBSIDIARY OF THE PENNSYLVANIA SALT MANUFACTURING COMPANY

500 Fifth Ave., New York • 80 E. Jackson Boulevard, Chicago • 106 S. Main St., Akron

The Pennsylvania Salt Manufacturing Company of Washington:

Los Angeles • Tacoma • Berkeley • Portland

Shawinigan Chemicals, Ltd.: Montreal • Toronto

Airco Company International, New York







## ... when WAX is the PROBLEM!

Sometimes big plans can hinge on small items. For instance—you've checked the demand and know the public will buy your new product and cry for more... but, unfortunately, that new product formula requires a reliable source of supply for a special type of microcrystalline wax. If you could just solve that one problem... Mister, you need a *specialist!*

Wax is Bareco's business... their *only* business. They can offer you the type of technical counseling you require. So don't drop those big plans into "deep 7", contact the Bareco Oil Company... SPECIALISTS in microcrystalline wax.

Be Square 190/195 melting point  
Be Square 180/185 melting point  
Be Square 170/175 melting point  
Starwax 180 minimum melting point  
Ceraweld 155 minimum melting point  
Ceratak 155, 165 minimum melting point  
Victory 155, 165 minimum melting point  
Petronauba emulsifiable petroleum wax for polish formulations.

Write for samples, specifications, prices.



**BARECO OIL CO.**  
BOX 2009 • TULSA, OKLA.

## RESEARCH . . . . .

N. Y.) tells CW it is intensifying its research, but isn't prepared to talk about new products. Hellige specializes in colorimeters, colorimetric comparators, turbidimeters, hemometers, etc.

- Ace Glass, Inc. (Vineland, N. J.) has developed a line of new "modular glassware." They are smaller editions of regular glassware, but not in the micro range (e.g., a 5 ml. erlenmeyer flask and a three-necked 50 ml. flask). Also noteworthy: a new durable sintered glass filter.

- Barnstead Still & Sterilizer Co. (Boston), which makes water stills, hot-oil sterilizers, water demineralizers, and laboratory autoclaves, figures that purifying air is not too different



**ELECTRONICS: No letup in sight**

from purifying water. "Vent-Guard" is a recent Barnstead invention designed to purify the air that rushes into a tank as it is emptied of liquid. A lab item useful in keeping distilled water free of air-borne contaminants, the device keeps out dust, gases, alkaline and acid vapors, and bacteria. It's also useful for food processing tanks.

- Blue M Electric Co. (Chicago), which manufactures electric ovens, furnaces, water baths, sterilizers, and related temperature control equipment, has just introduced its "Magni-Whirl" waterbath line. Key feature: magnetic stirring eliminates motor and stirrer, permits the whole top of the bath to be used as working area.

- Roscher & Betzold, Inc. (Chicago, Ill.) specializes in hydrometers. Its latest contribution is a line of beer and wort hydrometers with built-in thermometers. Another new Roscher offering is a thermometer for measuring skin temperatures in clinical work.

- Labline, Inc. (Chicago, Ill.) (maker of electric heating devices) has just unveiled a new line of "Force-Aire Bench-Saver" ovens which sit on the floor, save bench space.

- Arthur S. La Pine & Co. (Chicago, Ill.) has a new polyethylene laboratory sink trap; also a new (still under wraps) set of atomic models. In conjunction with Swift & Co., La Pine has developed an A.O.M. bath for "active oxygen method" tests of relative stability of fats and oils. This A.O.M. method was developed by Swift, is widely used to test efficacy of proposed anti-oxidants.

- Precision Scientific Co. (Chicago, Ill.) has come up with a new, fast automatic electronic flash point tester, worked out in cooperation with Standard Oil of Indiana. It's said to be useful to refineries and bulk stations in checking gasoline-contamination of fuel oil. Precision Scientific is also the source of a new heater that heats up and cools down faster than many lab heaters.

- Coors Porcelain Co. (Golden, Colo.) concentrates on porcelain ware; insulators; combustion, pyrometer and special service tubes. Latest product: a porous-bottom crucible for filtering bacteriological solutions.

- National Appliance Co. (Portland, Ore.) puts the emphasis on ASTM equipment. Typical new item: revolving shelf oven designed specifically for ASTM asphalt test.

- Nuclear Products Co. (El Monte, Calif.) produces (among other products) static eliminators. New: a device called Staticmaster for eliminating static (and static-attracted dust and lint) from roll film in photolab work.

- Lindberg Engineering Co. (Chicago) is about to unveil a high-frequency induction heating unit for use in combustion analysis of sulfur in organic and petroleum compounds. The firm says this is expected to reduce the analysis time from 8 hours (by the Parr bomb method) to 8-10 minutes.

Although these companies provide a pretty good cross-section of the laboratory equipment manufacturing industry, the list is by no means complete. But evidence of vigorous research in this highly competitive business is clearly apparent. And there is no letup in sight, in view of still expanding (see p. 50) research expenditures. Not only are companies investing more in research, they're asking more for their money. Apparatus makers have their work cut out in keeping pace with demands for more and better equipment.

# For Humectant Action plus...

Powerful Solvent Action  
Low Viscosity  
Low Freezing Point  
Low Cost

Use Carbide's **Diethylene Glycol**

As a hygroscopic agent, diethylene glycol is equivalent to glycerol—and because of its ether linkage, it is generally a better solvent for resins, dyestuffs, and proteins. This solvent power coupled with a low freezing point ( $-8.0^{\circ}\text{C}.$ ) and low viscosity (35.7 cps. at  $20^{\circ}\text{C}.$ ) gives diethylene glycol a range of usefulness that cannot be equalled by other commonly-used humectants. And diethylene glycol gives more humectancy and solvent power for your dollar than any other humectant.

## CARBIDE AND CARBON CHEMICALS COMPANY

A Division of  
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Diethylene glycol is successfully used for:



Gas dehydration



Compounding of GR-S synthetic rubber



Moistening and softening agent for adhesives, cellophane, paper, glues, and gelatin



Resin solvent and softener in composition cork



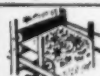
Humectant and resin solvent in steam-set inks



Humectant for tobacco



Conditioner for textile fibers and yarns



Dyestuff solvent and humectant for printing pastes that will not dry out on storage



Gas reaction inhibitor in casting magnesium and aluminum

You can also use diethylene glycol as a mutual solvent in cutting oils, as an intermediate in the preparation of alkyd resins and fatty acid esters, and as a solvent in the processing of intermediates for cortisone.

**Availability:** Diethylene Glycol is available in commercial quantities. For technical help, samples, or prices, call the Carbide office nearest you.

**What They Spent**

(in dollars; 000 omitted)

**a roundup of 15 companies'****1953 research expenditures . . .**

| Company                   | Research Outlay |        | Sales     |           |
|---------------------------|-----------------|--------|-----------|-----------|
|                           | 1953            | 1952   | 1953      | 1952      |
| Allied Chemical . . . .   | 14,500          | 13,000 | 545,561   | 490,183   |
| American Cyanamid . .     | 20,317          | 18,844 | 380,000   | 368,000   |
| Atlas Powder . . . . .    | 1,338           | 1,225  | 58,788    | 52,970    |
| Commercial Solvents . .   | 1,500           | 1,500  | 51,310    | 50,279    |
| Dow Chemical . . . . .    | 12,912          | 12,215 | 430,385   | 407,159   |
| Du Pont . . . . .         | 57,000          | 52,000 | 1,760,000 | 1,613,036 |
| Hercules Powder . . . .   | 7,905           | 6,394  | 190,202   | 181,517   |
| Industrial Rayon . . . .  | 2,163           | 1,700  | 70,302    | 67,935    |
| Monsanto Chemical . . .   | 10,267          | 8,852  | 340,617   | 266,704   |
| Minnesota Mining . . .    | 6,700           | 5,400  | 219,916   | 185,242   |
| Chas. Pfizer . . . . .    | 5,000*          | 5,000  | 127,003   | 107,084   |
| Spencer Chemical . . .    | 974             |        | 32,469    | 29,460    |
| Victor Chemical . . . .   | 1,007           | 872    | 42,675    | 35,653    |
| Virginia-Carolina . . . . | 463             | 387    | 82,126    | 77,669    |
| Union Carbide . . . . .   | 34,000          | 30,000 | 1,048,157 | 978,505   |

\* Slightly higher, but exact figure is not obtainable.

**Finish of a Phase**

The table shown above—compiled from the first complete 1953 research spending tallies—silently proclaims the close of a phase: the full-throttle industrial research expansion sparked, in good measure, by "excess profit" dollars.

Expiration (at the close of last year) of the burdensome excess profits tax is, in the consensus, having a sharp impact on the industrial research picture. But it won't be easy to discern in next year's accounting sheets. Dollar totals for research spending should reflect gains over those of 1953.

Underlying factors: a still bright sales and profits outlook for 1954; management's recognition of the value of long-term research planning, as opposed to altering policy with each shift of the economic wind.

The disposition of budget increases will tell the story of what's happening in research. A growing share of future increments appears to be destined for the support of work that promises relatively rapid returns. Most experts still agree, however, that a leveling off followed by a dip in the research spending curve would follow close on the heels of a major sales drought.

**Patent Offering**

Eight chemical patents issued to the government in January have just been released for license.

- "Process of making N(1,1-dimethyl-3-hydroxybutyl)-lactamide" is covered by 2,665,308. The technique is based on the reaction of 4,4,6-trimethyl-2-(1-hydroxyethyl)-5,6-dihydro-1,3,4, H-oxazine with water at room temperature. Product serves as an intermediate in synthesis of alkyd resins. U. S. Dept. of Agriculture, administers the patent.

- "Beneficiation of Beryllium ores by froth flotation," subject of patent 2,666,587, describes a process of treating beryl-containing ores with hypochlorite solution; adjusting acidity of the resulting pulp; agitating the pulp with a water-soluble petroleum sulfonate and frothing agent; and, finally, floating the beryl particles from the residual gangue. Dept. of Interior controls the method.

- "Flotation process of separation of silica and rhodonite," patent 2,666,588, deals with a method of treating rhodonite-silica ore pulps with a frothing agent, dextrine and trisodium phosphate; neutralizing the pulp; and floating the silica from the ore by the addition of a cationic collecting agent (e.g., a lauryl amine hydro-

chloride). It's in the hands of Dept. of Interior.

- "Alkaline cleavage of pseudo-sapogenin oxidation products," patent 2,666,770, covers the manufacture of a hormonal delta 16-pregnenolone from a steroidal sapogenin. Products are useful in the production of cortisone and sex hormones. Dept. of Agriculture holds the patent.

- "Apparatus for the manufacture of plastic explosive pellets," patent 2,666,948, details an apparatus for pelleting a thermoplastic explosive. Briefly, the machine comprises a container in which the explosive composition (e.g., a mixture of TNT, cyclonite and wax) is melted. The container has holes in the bottom through which the composition is extruded into pellets. Army Dept. administers the patent.

- "Liquid level control," patent 2,667,178, describes a level indicator for liquefied gas containers. The device, electronically motivated, was developed by Atomic Energy Commission researchers.

- "Heat treatment of polytri fluoro-chloroethylene plastic," patent 2,667,474, covers a method of making the polymer softer and more rubbery. Here's how it's done: the polymer is heated to a point above its transition temperature, rapidly quenched, and heated for a relatively long time at a temperature just below the transition temperature. It's an Atomic Energy Commission patent.

- "Method of making nonswelling starch granules with diisocyanates," patent 2,668,169, blueprints a method by which starch granules are suspended for five minutes in a dilute solution of an organic diisocyanate. After the granules are removed and dried, they're suitable for use as plastic filler, inert carriers for insecticide dusting powders. Dept. of Agriculture holds the patent.

**High on Resistance**

Cooperative research by the Army's Office of the Quartermaster General and M. W. Kellogg Co. (New York) has yielded a new breed of synthetic rubber.

It's a Kel-F fluorocarbon elastomer, possesses high resistance to breakdown. Reported to stand up to fuming nitric and sulfuric acids, the new material is apparently unharmed by fuels, lubricants, ozone and sunlight. Moreover, claims Kellogg, the rubber is nonflammable, tough, heat resistant, a good electrical insulator and serviceable over the temperature range of -15 to 400 F.

Envisioned applications are in fuel



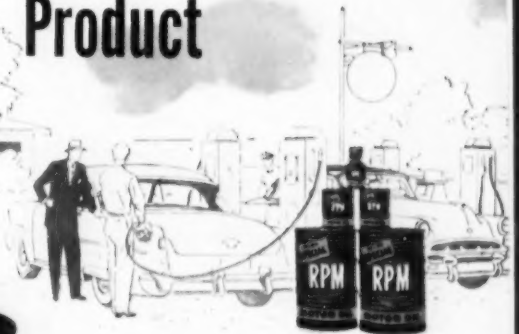
# Rheemcote Poster Drums

Give Sales Producing "Family Identification"

to *new*

CALIFORNIA OIL COMPANY

Product



To introduce its *new* RPM 10-30 Special Motor Oil, The California Oil Company supplemented usual types of advertising with a colorful display designed to help win quick public recognition and acceptance for this new product.

An attractive, new four-color package design was developed. This design is featured on all RPM 10-30 packages from one-quart cans to 55-gallon drums.

This "family" of packages displayed in pyramid form at thousands of service stations throughout the East has helped California Oil quickly establish recognition and acceptance for this new motor oil.

Reproduction on large containers of the same design that appears on small packages is made possible by the exclusive Rheemcote lithograph process with which any design can be reproduced on drums up to 55-gallons in capacity.

You can use this powerful new advertising medium effectively. We will be glad to discuss the matter with you, or send you a colorful booklet which describes the sales possibilities of this important new medium.

*Sell as you  
ship with*

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**RHEEM MANUFACTURING COMPANY**

**World's Largest Manufacturer of Steel Shipping Containers**

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# New products and profits with Armour Chemicals

**With this new emulsifier,  
furniture polishes resist stains and spots!**

Two things usually happen when someone leaves a wet glass on a new coffee table. There's a circular stain left by the water. And there's a housewife who's fighting mad. Manufacturers of furniture polish know this, and they're eagerly proving a new Armour emulsifier which actually improves the water-resistant and non-spotting characteristics of furniture polish.

This new emulsifier is a combination of Ethomeen S/12 and Arquad® 2C. Each is an effective emulsifier by itself, but they are more effective for this application when combined. They produce a furniture polish that forms a water repellent surface immediately upon drying.

Armour's wide range of emulsifiers has helped solve many similar problems. Emulsions have been most widely used for insecticides, fungicides, etc. Other uses have been multiplying rapidly. Application of finishing agents to textiles is a good example. A long bath is all that is necessary, since cationic emulsions tend to exhaust and bind their oil phases on textile surfaces. Wood, hair, cellulose and concrete can also be coated because of this cationic action.

Technical Bulletins F-2, "Armour Emulsifiers", and E-4, "Cationic and Non-Ionic Emulsifiers for Insecticides", offer a clear and complete picture of Armour's chemicals for the emulsion technologist. Send the coupon for free copies.





### Neo-Fat® 140 added to the alkyd enamel keeps kitchens sparkling white for years!

Every housewife likes her kitchen appliances and cupboards to stay shining white. But most alkyd enamels cannot withstand the attack of kitchen fumes, greases, and harsh detergents without turning yellow. To combat this discoloration problem, Armour has developed a group of unsaturated fatty acids which assure long life and continuing brilliance for white alkyd enamels.

Neo-Fat 140 is one of these efficient, economical raw materials for air-dry and high-bake resin formula-

tions. Neo-Fat 140's brilliant color is carried through into the finished alkyd, yielding a product with lighter vehicle color and heat-color stability.

The low titer of Neo-Fat 140 means it can be exposed to temperatures as low as 5°C. without solidifying. Faster processing time, and more double bonds per gallon are other advantages. Send the coupon on your letterhead for full information (Tech. Bull. A-8) and free samples of Neo-Fat 140—for whiter, brighter, longer-lasting alkyls!

### Special fatty acid from coconuts gives extra gentleness to shampoos

Here at Armour Chemical Division Laboratories, nature keeps coming in to give us a hand in our job of helping you manufacture better products for living. This time it is in the form of a special coconut fatty acid which will help you add extra gentleness to shampoos.

Neo-Fat 255 (Stripped Coco) is ideally suited for shampoos and other products that require pleasant, soothing contact with the skin because it does not contain the irritating low molecular weight fatty acids (Capric, Caprylic, Caproic). These smooth, bland characteristics of Neo-



Fat 255 will also help you in manufacturing better liquid hand soaps, fat liquors, and softening agents.

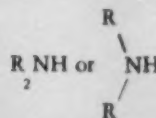
Neo-Fat 255 is available in 55-gallon drums and aluminum tank cars. Send the coupon today for free samples and literature.

**ARMOUR CHEMICAL DIVISION**

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### First Time Unsaturated Secondary Fatty Amines Ever Offered To Industry!

Two new unsaturated secondary amines produced from tallow and soya are now available for your testing. These are the first *unsaturated* secondary fatty amines to be offered to industry and have been made possible only by new developments in manufacturing methods. These compounds are identified as Armeen® 2T and Armeen® 2S and have the following general configuration:



Because of the unsaturation in both compounds, these two secondary amines are more easily liquefied than the corresponding saturated secondary amine (Armeen 2HT), and will show better solubility in organic solvents.

These products are so new that possible uses have not yet been explored extensively. However, the chemist acquainted with the reactivity and polar substantivity of amines and their derivatives will recognize the potentialities of Armeen 2T and Armeen 2S in corrosion inhibitors, lubricant additives, rubber processing, textile treating compounds, emulsifiers and de-emulsifiers, etc.

Samples of both of these new secondary amines are available for your testing. We will be pleased to give you technical assistance in developing uses or applications for these products.

#### MAIL THIS COUPON WITH YOUR LETTERHEAD

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☐ Armeen 2S Sample  
☐ Armeen 2T Sample  
☐ Stripped Coco Sample  
☐ Tech. Bull. E-4 ☐ Tech. Bull. F-2  
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# The Difference is Experience



Whether you plan to build a house or a multi-million dollar chemical plant, you look for a contractor with a record of satisfactory experience. Experience comes from doing things repeatedly and profiting by early mistakes. It is not acquired in a day or a year but grows in value and importance as the years go by.

That's why, in the field of chemical plant construction, the name Chemico has become a synonym for experi-

ence...forty years in fact, with over 800 installations standing as a tribute to that experience.

When you buy a Chemico plant, whether it be for the manufacture of sulfuric, phosphoric or nitric acid, or for ammonia, methanol, urea or any other heavy chemical, you purchase also that intangible thing that assures satisfactory plant performance—EXPERIENCE.

CC-289

## CHEMICAL CONSTRUCTION CORPORATION

A UNIT OF AMERICAN CYANAMID COMPANY

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*Chemico plants  
are profitable  
investments*

## RESEARCH . . . . .

hose, diaphragms, gaskets, seals, tank linings; also in coatings for protective clothing worn for handling corrosive materials. Added favorable point: the elastomer may be coated on paper, fabric, metal, etc., from both water emulsion and solvent systems.

Kellogg is now erecting a pilot plant capable of turning out several thousand pounds/month of Kel-F. Until its completion (scheduled for late this year), all available elastomer will be funneled to the military.

**Scorch Protection:** American Cyanamid has developed a new rubber chemical, which, it says, will provide increased protection against processing scorch in rubber compounds. It's n-oxydiethylene benzothiazole-2-sulfenamide. Tradenamed Nobs Special the accelerator is designed for use with high pH reinforcing blacks, extends the safe processing period of scorch-susceptible stocks for as much as 10 minutes. This delayed action permits mold flow in the first few minutes of the cure cycle, reduces surface defects and flow cracks. Cyanamid claims the new material gives good results in the manufacture of floor tiles, heels, soles, wire insulation and other products. Caution: when no furnace blacks are used in compounding, some activation of the new accelerator is required by basic materials such as lime or thiuram monosulfides.

**Modern Tongs:** For handling radioactive materials, Instruments & Equipment Inc., (New York) has brought out its Atomlab Radiarm, Sr. remote handling tongs. The tongs feature three interchangeable shafts and two interchangeable jaws, all made of easily decontaminated heavy aluminum. Based on a "squeeze to release" principle, the tongs are recommended by the manufacturer for use by radiochemists in handling containers of radioactive liquids; for radiologists working with radium; and in industrial radiography work.

**New Lab:** Operations have been started by the Meer Corporation, at its new research laboratory, North Bergen, N.J. Voldemar Madis heads up the research, which points toward new outlets for the botanical drugs, drug extracts, resins, spices, and oleoresins Meer imports and processes.

**Tough Timer:** Precision Scientific Company has redesigned its Time-It laboratory electric stopwatch to increase durability. One change: a new heavier-duty motor.

### Multiply

SALES



### Add

PRODUCT APPEAL



### Subtract

SHIPPING LOSSES



Write for free booklet,  
"How To Use Color On Corrugated Boxes,"  
Hinde & Dauch, Sandusky 33, Ohio

# HINDE & DAUCH

*Authority on Packaging*



## *The Mysterious Source* of the Profitable Metal

**W**HAT manner of men were these who came—no one knew whence—bearing tin. And left—no one knew whither—bearing gold. They were the Phoenicians; they were merchants; they kept their own counsel. Silence stood guard at their source of supply and kept their profits safe.

Some said they obtained the metal from Cornwall in England—once called the "Tin Isles". And those who coveted went to seek—fruitlessly. The bearded Phoenicians smiled and sailed—and sailed and smiled.

Today the only mystery concerning tin lies in the unlimited uses to which it can be adapted. Metal & Thermit Corporation, through research, is constantly seeking and finding new ways of employing tin and tin chemicals. If you have a tin problem, "sign on" with M & T. Perhaps we can solve it together.



**METAL & THERMIT CORPORATION**

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|   |
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| THERMIT WELDING                         |
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| ARC WELDING—Materials and Equipment     |
| CHEMICALS and ANODES for Electrotinning |
| CERAMIC OPACIFIERS                      |
| STABILIZERS for Plastics                |
| TIN, ANTIMONY and ZIRCONIUM CHEMICALS   |

## RESEARCH . . . . .

**Mass Attack:** New York's Museum of Natural History is now a middleman in the search for new antibiotics. The museum is accepting soil samples from anyone in the New York area who cares to dig one out of his backyard. "This earth," says a press report, "will be forwarded to the company (Chas. Pfizer) that discovered Terramycin" for screening.

**Hot Atom School:** Special Training Division of the Oak Ridge Institute of Nuclear Studies will run three basic isotope techniques courses and three special courses this summer. Also scheduled: a one-week advanced course in applied instrumentation. Due to get under way on June 28, the course will consist of a group of lectures on instrumentation techniques, demonstrations of instruments by manufacturers. Registration fee for all courses is \$25.

**Decontamination Blueprint:** Researchers at the Hanford plutonium plant (operated for Atomic Energy Commission by General Electric) have come up with some interesting facts in recent radiation decontamination studies.

They found, for example, that rats fed plutonium absorbed into their intestine only a fraction of that predicted; and the best agents for removing external contamination are those that also remove part of the outer layer of skin. Plutonium, absorbed into the body, destroys blood-making tissue.

**Fiber Emphasis:** Plans for a new \$180,000 research laboratory were unveiled last week by National Vulcanized Fibre Co. (Wilmington, Del.). When completed, the new facilities will add 20,000 square feet of working area for fiber and plastic studies. Construction is due to begin in about two months.

**New Polymers:** The Du Pont Co. has just been assigned a patent (2,671,082) on the preparation of an interesting new group of aromatic isocyanate dimers. The new compounds are prepared by contacting an aromatic isocyanate with a mixed aromatic-aliphatic tertiary phosphine catalyst.

**New Phenolic:** A new nitrile rubber-bearing phenolic molding compound is the offering of Durez Plastics & Chemicals (North Tonawanda, N.Y.). Durez claims it is readily molded by compression or plunger methods.

**Chemical Week • March 20, 1954**





# ATLAS

## chemical digest

INDUSTRIAL CHEMICALS DEPARTMENT  
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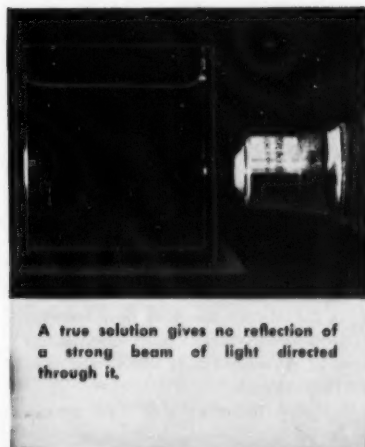
## Clear emulsions reduce need for volatile solvents

For flavors, colognes, vitamin preparations, medicinals and similar products which require incorporation of water-insoluble materials, such as essential oils and fat-soluble vitamins, into aqueous solution, the use of Atlas surfactants rather than alcohol and other solvents presents several advantages.

Since no volatile solvent is needed,



Both the true solution (left) and clear emulsion (right) appear transparent to the unaided eye.

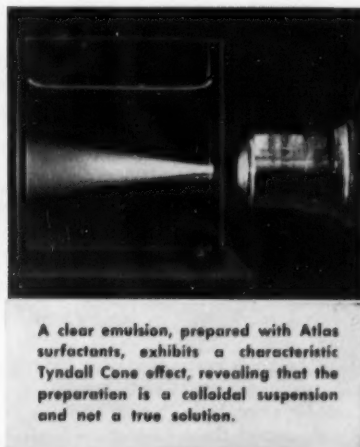


A true solution gives no reflection of a strong beam of light directed through it.

preparation precautions are reduced. Variation of product from batch to batch is eliminated, since no solvent is lost during processing or storage. Material costs are reduced by the use of water instead of expensive solvents.

The "solutions" prepared in this manner have excellent clarity, even when further diluted with water. The ratio of surface active agent to essential oil varies with the application, and ranges from 5 to 1 to approximately 10 to 1.

Tween® emulsifiers are recommended for many applications of this type. They may be used by themselves, or in combination with alcohol where astringency or other effects are desired.



A clear emulsion, prepared with Atlas surfactants, exhibits a characteristic Tyndall Cone effect, revealing that the preparation is a colloidal suspension and not a true solution.



**Atlas Publication lists drug and cosmetic formulas**

The "Guide to Cosmetic and Pharmaceutical Formulations" recently published by Atlas contains extensive data on the use of sorbitol and Atlas surfactants in the preparation of drugs and cosmetics.

Its 92 illustrated pages include 86 formulas for preparations of many types, detailed technical information on Atlas products, and a bibliography of applicable literature.

A copy will be sent to executives, research directors and purchasing agents of cosmetic and pharmaceutical firms who request it in writing on their company letterhead.



**Have you met the Renex® detergent family?**



Renex non-ionic detergent concentrates give a broad range of detergency action. They are available in liquid and powder form, with either high or low sudsing action. You can choose from the following types:

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**Renex 25:** light yellow, salt-free organic powder with low sudsing action. Based on polyoxyethylene ester of mixed fatty and resin acids.

**Renex 30:** milky white liquid with high foaming action and wetting power, excellent acid and alkali stability. A polyoxyethylene ether alcohol, 100% active.

**Renex 35:** pure white, salt-free organic powder. Based on polyoxyethylene ether alcohol.

These Renex products add high detergency at low cost to a wide variety of household, dairy or commercial cleaning compounds. They have a wide range of compatibility with other ingredients of built detergents, such as acids, alkalis, alkaline builders and soaps. For samples and technical data, write to Atlas.



WYANDOTTE'S CREMERS: "Let's not price ourselves out of business . . ."

## Tonic for Weak Selling

In this year of souped-up selling, the appearance of new, the revival of old sales techniques are to be expected. One disinterred practice, recent evidence of weak selling, is the tendency to shave prices.

This week, in an exclusive interview, CW discussed with Bert Cremers, vice-president, sales, Wyandotte Chemicals, Michigan Alkali Division, his views on weak selling. Here are the opinions of a well-known sales leader, one who knows what it means to sell in both lush and lean times.

**CW:** How do you, with your 25 years' chemical selling background, view this shift away from a seller's market?

**Cremers:** I see an orderly shift from a war to peace economy being made. I believe we can accomplish it. But, it can quickly backfire if panic replaces sound selling.

**CW:** We understand you are particularly concerned over reported cases of distress selling. Just how do you feel about that practice?

**Cremers:** Distress selling never encouraged buying or contributed to a stable economy. Even the purchasing agent who takes advantage of the cut prices (and that's his job) will admit that he prefers to buy in a stable market.

**CW:** As a rule, then, you consider the chemical market relatively stable?

**Cremers:** The chemical industry always has had a conservative pricing policy. Its historic pricing pattern is one of voluntary price reductions as volume and production efficiency developed. Like the petroleum and other process industries, its service to customers requires a constant expansion of facilities, a continual scrapping of obsolescent processes in favor of newer technologies, and aggressive forward-looking research.

**CW:** But what difference does it make to the customer why the price is cut, just as long as he can get his material cheaper?

**Cremers:** A "dog-eat-dog" fight for the customer's dollar will bring the customer short-term benefits; the long-range objectives and developments will then be sidetracked so that in the long term the customer inevitably will pay.

**CW:** Most sales managers would probably agree on that. What are they actually doing about it?

**Cremers:** The sales managers are back on the road, and the worn-out definition I first heard in 1932 is again being revived . . . "The guy from the home office with a big expense account and a cut price."

Panicky sales managers who cover their own weaknesses and disabilities to sell by unrealistic "panic" pricing, not only retard the transition of busi-

ness from war to peace, but also actually undermine the future growth and expansion of all industry. Particularly the chemical industry, where costly development programs are carried on every day in order to provide real economies for the future.

**CW:** Surely you don't consider all reductions "panic" pricing. Under what circumstances do you believe price cutting is warranted?

**Cremers:** When savings are effected, they are passed on to the customer. Pricing policy should start in research, engineering, and production departments—to make better products at lower costs.

**CW:** Any other time? To meet competition, perhaps?

**Cremers:** While we have been forced to meet competition below what we consider reasonable levels, no sales manager has the authority to establish a new price without a



. . . let's sell to serve."

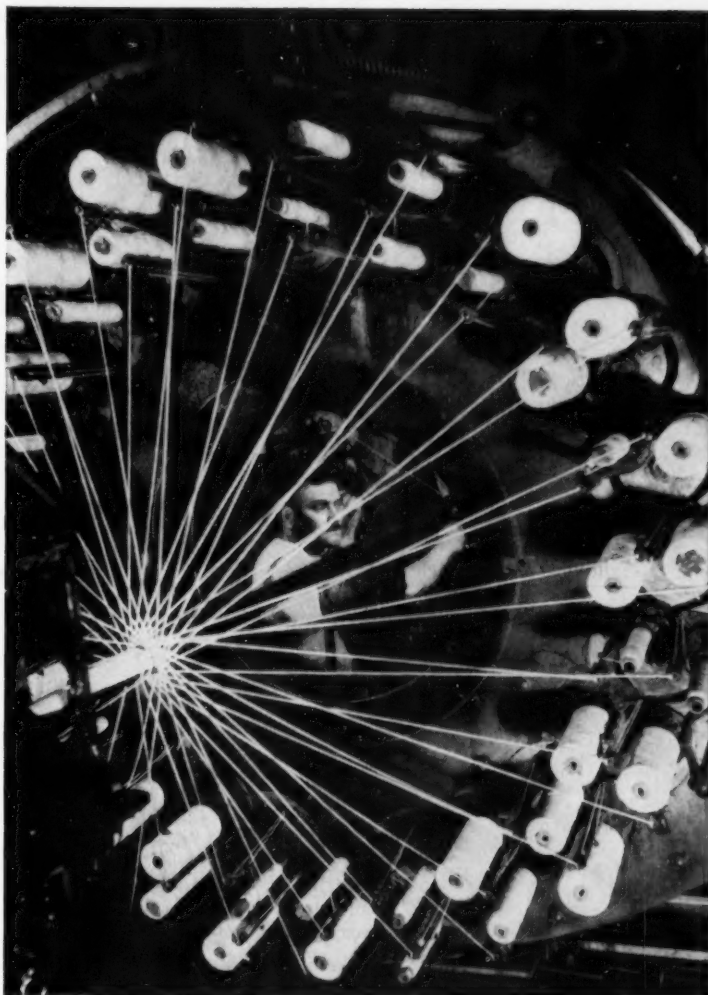
review by the pricing committee, and final approval by the president.

**CW:** What, then, would you say is a sound pricing philosophy?

**Cremers:** A sound pricing policy must be based on reasonable markups to provide normal returns on investment. This is the backbone of any business.

Starting with this premise, should we not de-emphasize "price" a little in our thinking? Shouldn't we spend more time developing men who can do a more creative and constructive job of advancing the vast new frontier of untapped outlets for chemicals? This, in my opinion, is the sound way to lower prices.

It is not inconceivable that unless the trend is reversed, many companies



Fire hose



House paints



Automobile body lacquers

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can price themselves out of existence, and irreparable damage can be done to the growth and development of our industry.

Let's price our products right and survive . . . let's not price ourselves out of business . . . let's sell to serve.

CW: "Sell to serve?" Just what do you mean by that?

Cremers: I mean that the chemical

**"Should we not de-emphasize price a little in our thinking?"**

salesman must be inculcated with the desire, and must be trained to have the ability to serve.

CW: By that, do you imply that chemical salesmen are not trained?

Cremers: Just check with any purchasing agent. Our own director of purchases recently commented that their lack of training is deplorable . . . some salesmen aren't even aware of the possibilities of their own product, their own company. Today's alert purchasing agent, in many cases, knows a great deal more about his vendors' products than the salesman who calls on him.

CW: What's to be done about it? For instance, what are you doing?

Cremers: In our own company, we have adopted a long-range program of intensive training. It starts with aptitude testing—to give us the most modern means of proper selection.

It continues with business methods training in HOBBSO (How Our Business System Operates). It extends into a period of product training so that a man can acquire firsthand knowledge of how our products are made and what they will do.

CW: Yes, but how about the man once he goes on the road?

Cremers: The field sales training never stops. It is continually supplemented by the many sales courses

**"Some salesmen aren't even aware of the possibilities of their product."**

offered by leading universities and agencies.

Backed by adequate market research, product specialists from the home office, and a well-directed advertising and public relations program, these men can "sell to serve."

CW: To get back to the matter of pricing, Mr. Cremers—obviously you



consider price cutting a negative attitude to stimulating sales. What's a more positive approach to the problem of moving the goods?

Cremers: More marketing know-how. In our great chemical age where creative genius has been directed toward research and manufacturing in wartime economy with markets

**"... we must become accustomed to overproduction in some areas."**

readily available, many leaders are now recognizing the gap that exists in marketing know-how.

How can we fill this void and still reduce prices? The chemical industry as a whole spends less for sales, advertising, promotion, sales helps, marketing than most major industries.

We should all spend more for most of these items. It is the only way I know to expand our markets.

CW: But many companies have been well aware of the need for marketing for quite some time, haven't they?

Cremers: True. Many companies have been preparing for the times we are experiencing now, but I fail to find one single chemical executive who feels complacent with his present marketing program.

CW: What are the prime factors in shaping up a marketing program?

Cremers: There are two considerations. First, our standard of living is not built on price alone. A cut price does not increase the total over-all market. In the chemical industry, as in many other industries, we must become accustomed to overproduction in some areas until our economy has the opportunity to readjust and catch up.

CW: And the other factor?

Cremers: Simply that our standard of living does not stand still.

Until a few years ago the large majority of American people were devoting their work and time mainly to the fulfillment of their basic needs. But today the luxuries of yesterday have become commonplaces; and the new dreams of today have a good chance to become the realities of tomorrow.

Two important facts stand out:

First, continuing increase of discretionary buying power among more and more people means that today's market is not only wider but also larger and deeper than ever before.

Second, this third-dimensional buying power has caused the greatest



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consumer shift ever recorded in the annals of economics . . . a situation of extraordinary significance in the marketing of chemicals.

**CW:** How does this consumer shift apply to chemicals?

**Cremers:** If you have a child between the ages of 5 and 12, he or she is a sub-teenager. There are 23.5 million like him, and by 1960 there will be 30 million!

**"Alert marketing managers are already sizing up 1965's customers."**

The sub-teenager has never known a depression . . . a time when travel was a luxury . . . or a period when there were no frozen foods. And chances are he or she has owned a plastic boat or doll.

Think, then, what a big chunk of your future market these sub-teenagers will constitute after they age a little.



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SQUARE BIN: Carries powders and granulars, nests when empty, cuts freight costs . . .

## No Deadheads These

Always ready to try something new to cut shipping costs, the chemical industry is eyeing developments in the Far West as the newest type shipping container goes into production.



TO CLEAN: Open and spray with hot water.

Chemical shippers are well aware of the advantages of aluminum shipping bins (CW, Jan. 16). But return freight costs and limited adaptability have prevented some producers from making more extensive use of bins.

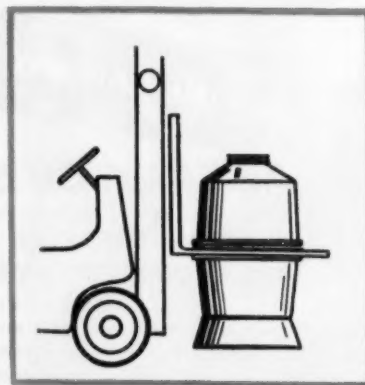
This week, the latest design in aluminum containers will start rolling off the Willy Motors, Inc. production line in Oakland, Calif. Called "Nesta-Bins" and tabbed, "time, space and money savers," they are the result of two year's work by Carl Williams, Jr., a Denver sheet metal contractor.

Nests on Return: The giant-size 1/8

in. aluminum containers—with a bulging waistline—are designed for shipping liquids, granulars and powders. Their air-tight, vacuum-seal feature eliminates product losses and contamination, makes them a natural for handling many chemicals.

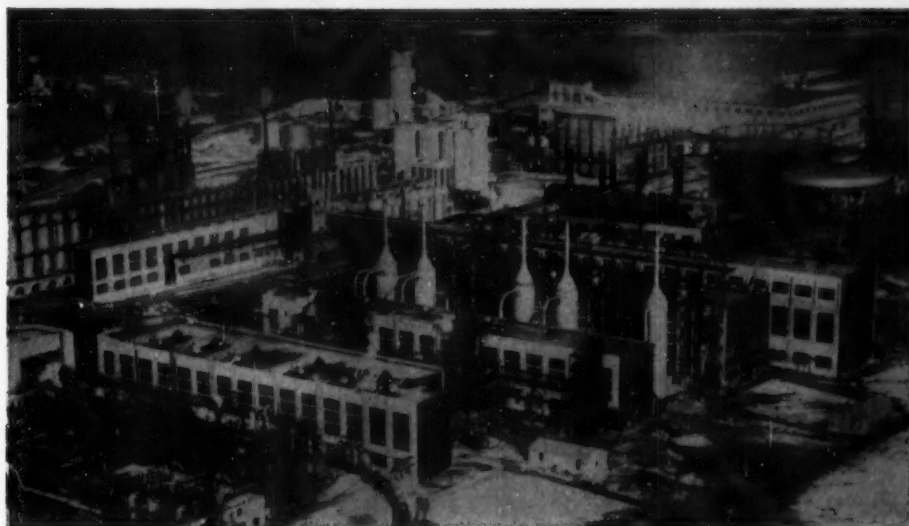
Top feature of the new containers, avers Sales Manager Daniel Walker, is the savings in return freight costs. Nesta-Bins taper slightly from the middle toward each end. When empty, they can be pulled apart at the middle and stacked one half within the other like paper cups or flower pots. The result: 10 empties occupy the same amount of space as one full bin.

Walker is promoting his bins to companies that bulk ship their products in specially equipped freight



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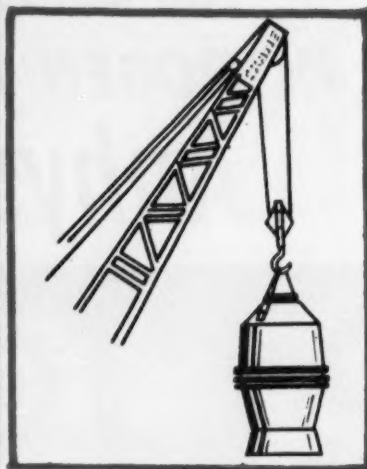
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cars, and pay, in effect, return charges on empty cars. He claims his bins will trim such return freight costs 90%.

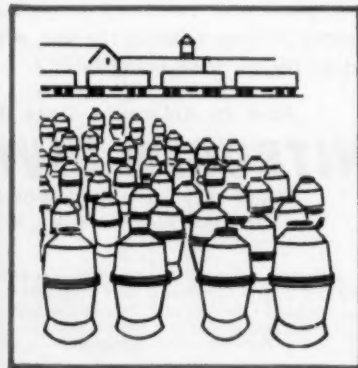
**Round and Square:** The bins come in three sizes—two square bins, one cylindrical. The 7-ft. high square bin has a capacity of 70 cu. ft., the 6-ft. model, 58 cu. ft. Both are designed so that 22 will snug into a freight car, from 12 to 14 into a trailer truck.

The cylindrical bin, recommended for handling liquids, will hold 315 gals. (42 cu. ft.) stands 6 ft. high, has a threaded opening for any required valve.

Special models are also being made—some fabricated of pure aluminum and lined with rubber or plastic.

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**NESTS:** Ten empty equal one filled.

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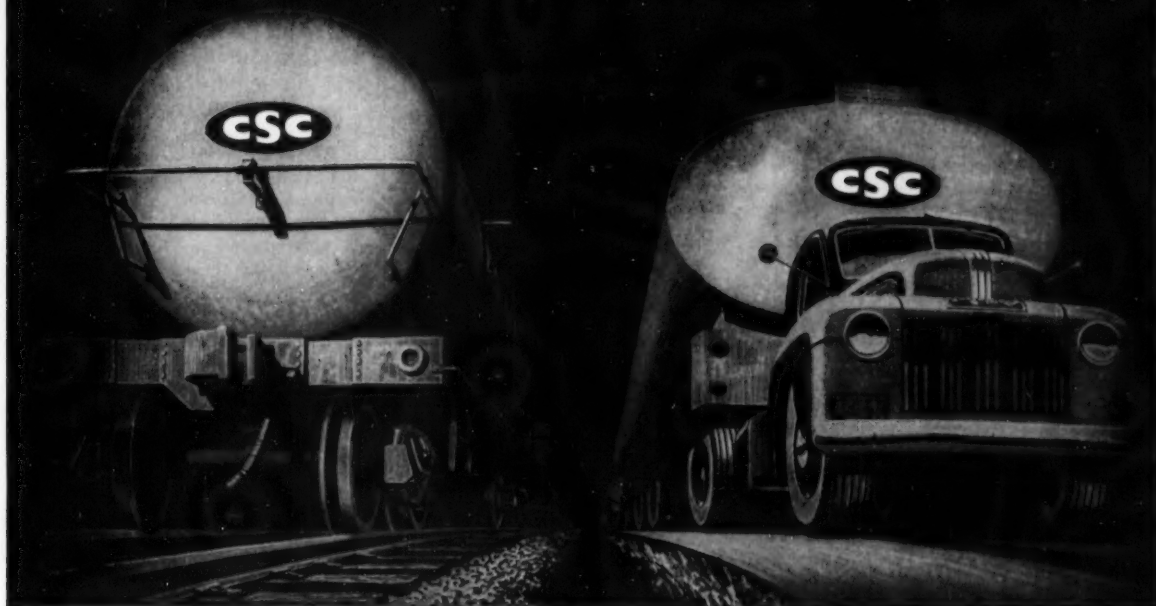
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INDUSTRIAL CHEMICALS DIVISION

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Coble  
TRICLO, CHICAGO

TRI-CLOVER AND TRI-CLOVER MARK  
MACHINE CO. CHICAGO, ILL. U.S.A.

## DISTRIBUTION . . .

- They are designed to be moved by fork lifts or cranes. Contents can be dispensed directly through 18-in. diameter doors in the outer ends.

- **Sales Target:** With production scheduled to be stepped up to 1,000 bins a month in a short time, sales manager Walker is busy mapping out his campaign. Bins will sell for from \$275 to \$305 each depending on size and quantity, but, Walker estimates, the savings in freight alone will amortize the cost in 18 to 24 months.

**For the Bookshelf:** Among the current literature offerings:

- Barnebey-Cheney Co. (Columbus, O.): a chart of uses of activated carbons.

- Acme Steel Co. (Chicago): the first 1954 issue of "Confab." Subject: application of steel strapping, wire stitching in industry.

- Bakelite Co. (New York): a brochure explaining uses of its trademark "Krene."

- Chemonomics, Inc. (New York): a 56-page booklet, "Market Research in the Chemical Industry."

**ASA Project:** The American Standards Assn. will undertake a study to standardize material handling pallets.

**Sales Shifts:** Some of the new representations and changes this week:

- Dow Corning Silicones Ltd. has moved into a new office and warehouse building in Wilson Heights, Toronto.

- Harshaw Chemical Co. (Chicago) has moved into new quarters. Facilities: expanded sales office, warehouse and service laboratory.

- Emery Industries, Inc. (Cincinnati) has opened a new sales office and warehouse in Cleveland.

- Frank Samuel & Co., Inc. (New York) has been appointed export agents for Roubechez, Inc.

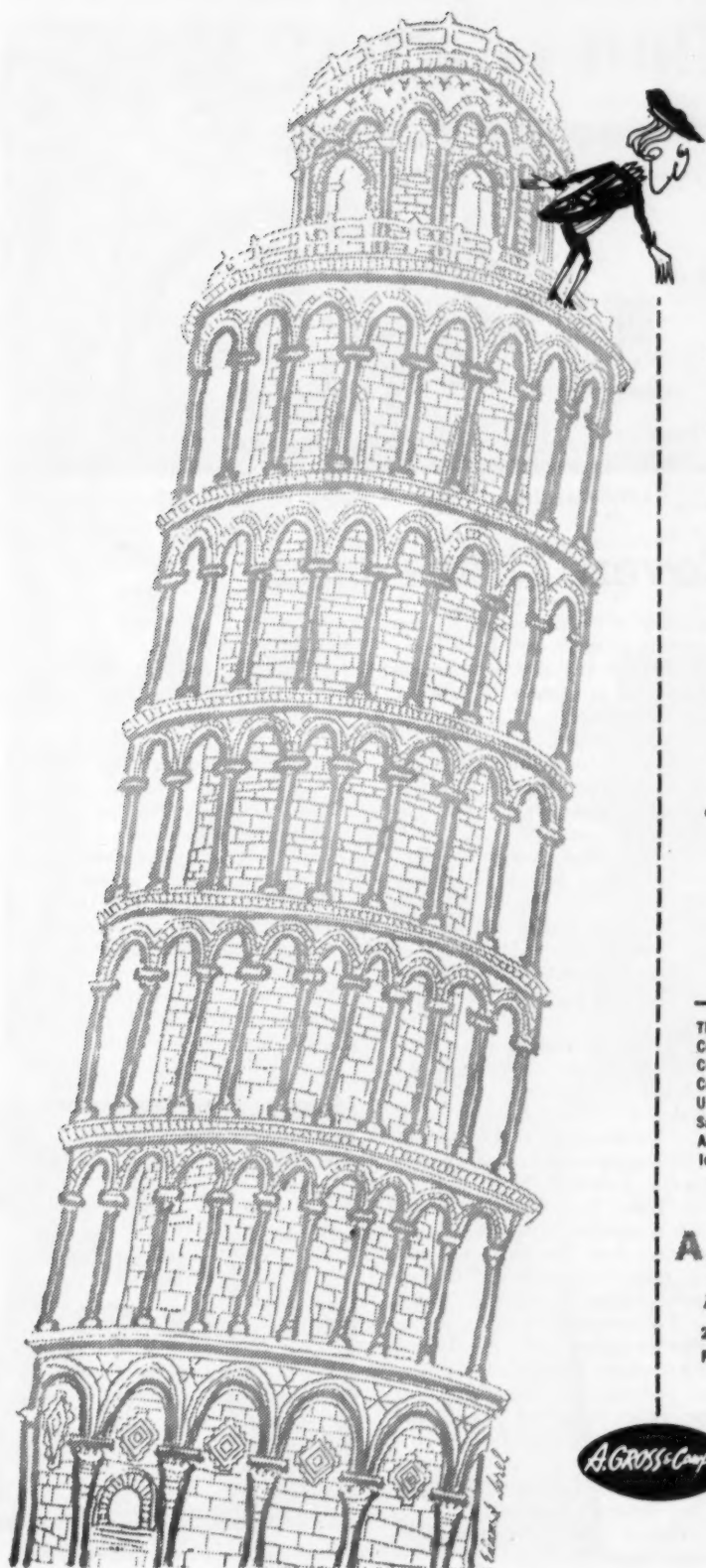
## Connecting Link

The Bi-State Development Agency's Terminal, a \$2-million installation situated on the eastern bank of the Chain of Rocks Canal just above the new locks at Granite City, Ill., is expected to begin operation this summer.

Discussing the Terminal's role of interconnecting the Mississippi Valley's rivers, railroads and highways, agency chairman Gen. Sverdrup said: "For the carrier, it means additional traffic whether he operates on roads, rivers or rails; for the consumer, additional economies reflecting the lowered cost of distribution."



# look... and see



GALILEO watched a ball fall from the Tower of Pisa. Much was learned from this seemingly simple experience. You, too, can learn much from what may appear to be a simple experience. Let A. Gross & Company supply you with the Coconut Fatty Acids that you need and you will see that due to our modern distillation plant the regular distilled grade is equal to many double distilled materials. You will find that the uniform special grade has had most of the caproic, caprylic and capric constituents removed. You will learn how you can save money by eliminating costly formulation changes made necessary by Coconut Fatty Acids of poor quality.

*Send for samples and our catalog  
"Fatty Acids in Modern Industry."*

|                            | GROCO 24<br>REGULAR | GROCO 26<br>SPECIAL |
|----------------------------|---------------------|---------------------|
| Titre                      | 22° — 25°C.         | 26° — 28°C          |
| Color 5/4" Lovibond Red    | 1 — 3               | 1 — 3               |
| Color 5/4" Lovibond Yellow | 8 — 12              | 8 — 12              |
| Color—Gardner 1933         | 2 — 4               | 2 — 4               |
| Unsaponifiable             | 0.25% — 0.50%       | 0.25% — 0.50%       |
| Saponification Value       | 261 — 270           | 250 — 257           |
| Acid Value                 | 260 — 269           | 250 — 257           |
| Iodine Value (WIJS)        | 6 — 12              | 8 — 14              |

## A. GROSS & Company

*Manufacturers Since 1837*

295 Madison Ave., New York 17, N. Y.

Factory: Newark, N. J. Distributors in Principal Cities



# PETROLATUMS WHITE OILS SULFONATES

REFINERIES AT

• GREYNA, LA.

• KARNIS CITY, PA.

• WAREHOUSE STOCKS  
IN PRINCIPAL CITIES

**SHERWOOD**  
REFINING COMPANY, Inc.  
Englewood, New Jersey



**Remember**

**Foster D.  
Snell, Inc.  
Maintains  
FOOD and  
DRUG  
Laboratories**

**intimately versed in**

**Routine Quality Control**  
(in your own plant)

**Improvement of Present Products**

**Inception of New Products**

(including Processing and Packaging)

**Physical and Chemical Properties**

**Taste and Stability Testing**

**Initial consultation involves  
no cost or obligation.  
Inquiries invited**



DISTRIBUTION . . . . .

**GARROWAY... is selling HOUSEWARES**



DAVE GARROWAY, NBC-TV salesman. His job: helping plastic houseware get . . .

## Seven Times Turn

Launching a new phase of its merchandising program for plastic houseware made of Styron, Dow Chemical is angling its promotion to build consumer acceptance.

With sights leveled on its customers' customers, the company's 1954 program is directed toward helping retail dealers move merchandise off their shelves.

Since Dow's basic interest in plastic houseware is to sell molders polystyrene, the entire project is aimed at making both dealers and shoppers aware of the "Made of Styron" label. The theme: stressing that articles made of Styron have been evaluated for:

- Proper application of plastics.
- Sound design.
- Good workmanship.

Dealers are being urged to feature plastic housewares "that wear the label your customers know."

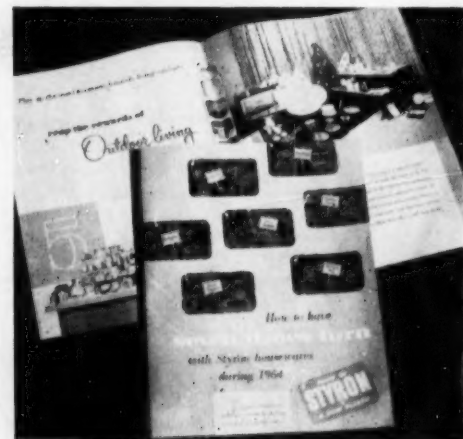
**Tie-Ins:** Labeled "How to Have Seven Times Turn," Dow's current effort is beamed at retail store owners. Suggesting that "the calendar guide special occasion promotions," the firm counsels retailers to make their own dates for turnover. Sample theme: "Bring Springtime into the kitchen with gay plastic housewares."

In addition to the Springtime theme, other suggested sales stimulants are: Mother's Day, Bridal Showers, Summer Picnics, Outdoor Living, Christmas and a General Promotional Display—for everyday needs. All seven are designed to go with special window and counter displays.

As part of this program, Styron houseware is being featured for the first time on Dow's network television effort. Dave Garroway will court some 12 million shoppers weekly on NBC-TV's morning news show, "Today."

Reinforcing the television schedule, full-color ads in national consumer magazines will be tied in with the special promotion themes.

This is the second of Dow's recent "special" promotions aimed at the consumer. Besides backing the Seven Times Turn play for acceptance of Styron by the homemaker, Dow is busy helping wall tile manufacturers with a special "Color Styling" merchandising unit (CW, Feb. 20) also designed to sell polystyrene.



IDEAS for houseware turnover.

# • Davison Bulletin •

**KEEP  
IT  
DRY!**

## **DRY AIR and GAS AVAILABLE**

You can have dry air in your control instruments or buildings where operations require low humidity. Dynamic adsorption can accomplish this efficiently, economically by forcing air or gas-air mixtures containing moisture through a layer or bed of chemically inert non-deliquescent silica gel. The adsorptive quality of silica gel removes the moisture making dry air available to meet your requirements. Today telephone cable producers, confectionary suppliers, libraries, ship cargo holds, etc., are dependent upon silica gel dry air systems. Many industrial gases such as nitrogen, oxygen, methane, hydrogen, bromine, chlorine, etc. are efficiently dried with silica gel.

## **LIQUID DEHYDRATION**

The presence of moisture in a liquid is often a source of operating difficulty in its application or a deterrent in the sale of the liquid. Davison silica gel offers an efficient means of moisture removal from practically all types of liquids, including dielectric oils, waxes, kerosene, benzene, toluene, methyl chloride, Freons, Gensolens and other halogenated hydrocarbons.

For help with your drying problem see your Davison Field Service Engineer or write.

**FREE**

Literature on Syloid® AL-1 (prevents pressure build-up in metallic paints) and Syloid® 162 (alkyd-urea flattening agent for synthetic finishes). Mail coupon for literature giving chemical and physical properties, use data, etc.

Progress Through Chemistry

**THE DAVISON CHEMICAL CORPORATION**  
Baltimore 3, Maryland

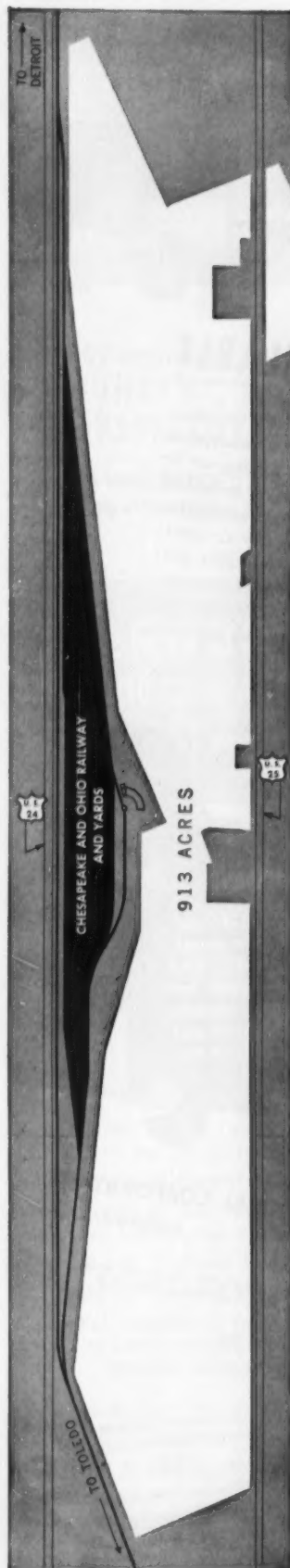
Producers of:  
Catalysts, Inorganic Acids, Superphosphates, Phosphate Rock,  
Silica Gels and Silicofluorides. Sole Producers of DAVCO®  
Granulated Fertilizers.

Please send me information on

- ☐ Liquid Dehydration  
☐ Syloid AL-1  
☐ Syloid 162

Name ..... Title .....  
Company .....  
Street ..... Zone ..... State .....  
City .....  
City ..... Zone ..... State .....





## Industrial Sites between DETROIT and TOLEDO

These sites lie between Routes 24 and 25, the two main highways between Detroit and Toledo, and right alongside the Chesapeake and Ohio's Ottawa classification yard. That means fast, direct freight service to practically everywhere.

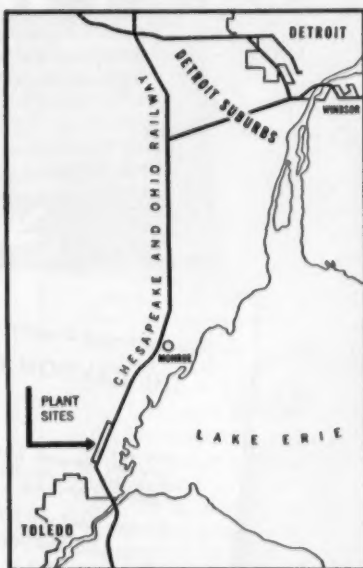
The location is at Erie, Mich., only ten miles from downtown Toledo, eleven miles from Monroe, and forty-seven miles from Detroit. The C & O owns 913 acres here which will be divided to suit the purchasers.

**Labor.** Skilled labor of all kinds is to be found in this area of diversified industry. Five thousand commuting workers pass this site on their way to jobs in Toledo.

**Water.** Before dieselization we built a ten-inch pipeline from

nearby Lake Erie and a softening plant to water the steam locomotives. There are 500,000 gallons of soft water a day now available to anybody who wants it, and an unlimited supply from nearby Lake Erie.

Natural gas and electricity are available.



For a Pin-Point Survey giving full information write to: Chesapeake and Ohio Railway, Industrial Development, Cleveland 1, Ohio; Detroit, Mich., or Huntington, W. Va.



## Chesapeake and Ohio Railway

SERVING:

VIRGINIA • WEST VIRGINIA • KENTUCKY • OHIO  
INDIANA • MICHIGAN • SOUTHERN ONTARIO



*Stauffer  
Chemicals  
for the...*

# Petroleum Industry



The Petroleum Industry must have reliable sources for heavy chemicals in the producing and refining operations. Stauffer has available for immediate delivery many of the chemicals needed by the industry, including sulphuric acid, muriatic acid, sulphur, and paraffin solvents. In petroleum processing and in the new and expanding petro-chemical industry Stauffer has kept pace and is prepared to supply industrial chemicals in any quantity.

With 43 plants and warehouses located in or near the petroleum centers, Stauffer has the complete facilities for a dependable source of supply.

**Stauffer  
Products:**

|                             |                              |                                      |                               |
|-----------------------------|------------------------------|--------------------------------------|-------------------------------|
| <i>Aluminum Sulphate*</i>   | <i>Ferric Sulphate*</i>      | <i>Sodium Hydrosulphide</i>          | <i>Sulphur Chlorides</i>      |
| <i>Borax</i>                | <i>Fire Extinguisher</i>     | <i>Sodium Silico</i>                 | <i>Sulphuric Acid</i>         |
| <i>Boric Acid</i>           | <i>Fluid</i>                 | <i>Fluoride*</i>                     | <i>Superphosphate*</i>        |
| <i>Boron Trichloride</i>    | <i>Insecticides and</i>      | <i>Sulphuric Acid</i>                | <i>Tartar Emetic</i>          |
| <i>Carbon Disulphide</i>    | <i>Fungicides</i>            | <i>Sulphur (processed)</i>           | <i>Tartaric Acid</i>          |
| <i>Carbon Tetrachloride</i> | <i>Muriatic Acid*</i>        | <i>for all uses</i>                  | <i>Titanium Tetrachloride</i> |
| <i>Caustic Soda</i>         | <i>Nitric Acid*</i>          | <i>Sulphur-Rubbersmakers</i>         | <i>Titanium Trichloride</i>   |
| <i>Chlorine</i>             | <i>Perchlorethylene</i>      | <i>Sulphur-Insoluble</i>             | <i>Solution</i>               |
| <i>Citric Acid</i>          | <i>Potassium Nitrate</i>     | <i>(in CS<sub>2</sub>) (special-</i> | <i>"Zol" Dry Cleaning</i>     |
| <i>Copperas*</i>            | <i>Rochelle Salt</i>         | <i>purpose rubber-</i>               | <i>Fluid</i>                  |
| <i>Cream of Tartar</i>      | <i>Silicon Tetrachloride</i> | <i>making)</i>                       | <i>(*West Coast Only)</i>     |



## STAUFFER CHEMICAL COMPANY

380 Madison Avenue, New York 17, N. Y.

221 N. La Salle Street, Chicago 1, Ill. • 326 So. Main Street, Akron 8, Ohio • 824 Wilshire Boulevard, Los Angeles 14, Calif. • 636 California Street, San Francisco 8, Calif. • North Portland, Oregon • P. O. Box 7222, Houston 8, Texas • Weslaco, Texas • Apopka, Florida

# SPECIALTIES . . . . .

## Chlorophyll Tries for a Comeback

Producers of chlorophyll think this year will mark a comeback for the product that in 1952 was hailed as "one of the nation's fastest growing industries."

Leading end use is still in toothpastes; just-started price cutting promises renewed consumer interest in the green stuff.

Down in the doldrums this year after skyrocketing to fantastic popularity in 1952, chlorophyll may be on the verge of better times. Among the factors in its favor: scientists now know more about it, the price per pound has been greatly reduced, and toothpaste companies are once again turn-

summer of '52, countless products touting it have fallen by the wayside. The prediction then was that the annual gross sales of products with chlorophyll would hit \$400 million. Now it's probably only a fourth of that.

Other skids: in 1952 chlorophyll production was over 100,000 lbs., today it's down to 25-35,000; then the price per pound was \$85, now it's \$45.

To get an understanding of the chlorophyll outlook, it's necessary to glance over last year's developments:

Last June, Colgate-Palmolive fired a one-two punch at Rystan: first, a notice that Colgate was canceling its licensing agreement and halting payment of royalties as of July 29; second, a civil suit in which Colgate asked the federal court in New York to declare the Rystan chlorophyll patent null and void. (CW Newsletter, June 27, '53). Colgate contends that the discovery claimed in the Gruskin patent—use of water-soluble chlorophyll derivatives in water solutions—was not an original invention, and in any case wouldn't cover use of "chlorophyllins" in toothpaste.

As a result of those twin blows, Rystan has been obliged, says its president, O'Neill Ryan, Jr., "to negotiate supplemental agreements" with Bristol-Myers, American Home Products, Lever Bros., and Zonite Products. Upshot: those four companies aren't paying royalties now, either.

Early this month, Colgate filed another suit against Rystan, for alleged violation of Rystan's obligations to keep strictly confidential the information Colgate supplied under its 1952 agreement with Rystan.

Another development last year was the exit of Archer-Daniels-Midland and National Alfalfa Dehydrating & Milling Co. from the chlorophyll manufacturing field. In April, '52, ADM acquired the Keystone Chemurgic Corp. (Bethlehem, Pa.) and leased, with option to buy, Chlorophyll, Inc. (Neodesha, Kans.). Now Keystone Chemurgic is back in the hands of its founder, Donald C. Carpenter. How much ADM lost in the venture is

anybody's guess. But it is known that National Alfalfa is out some \$1 million, the amount put in a plant in Lamar, Colo., that never got into production.

**Down to Three:** That leaves, as the big suppliers, Keystone, headed by Carpenter and the American Chlorophyll division of Strong Cobb & Co., Inc., led by Marion Ricketts.

Not so big, though an important factor, is the combination of Glidden Co. and Collett-Week, Inc. (Ossining, N.Y.). Glidden makes the chlorophyll extract in Buena Park, Calif., sends



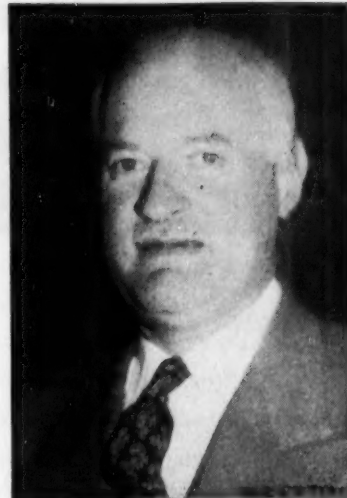
KEYSTONE'S CARPENTER: Back on his own again.

ing their attention to dentifrices containing "nature's magic ingredient."

In addition, chlorophyll is going to get its "second chance" with the American Chemical Society. Next Friday at the ACS national meeting in Kansas City, Mo., a full-day symposium will be devoted to "Sales Claims for Chlorophyll and Their Validity."

**Hard Fact:** What is noteworthy about chlorophyll these days is that, despite the amount of debunking it has been subjected to, it continues to be a strong selling point in a number of products. For instance, chlorophyll toothpastes constitute over one-quarter of the total toothpaste sales. Too, American Chicle reports that its Clorets products, mints and chewing gum, are selling even better now than they were a year ago.

But since chlorophyll's peak in the



STRONG COBB'S RICKETTS: His American Chlorophyll still a leader.

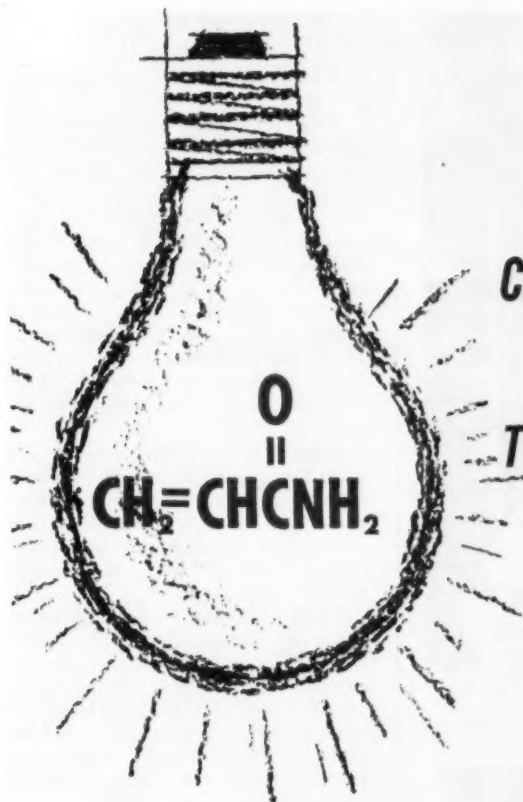
it to Collett-Week, which converts it into "chlorophyllins," the marketable form.

Collett-Week is credited with being the first supplier to cut (last July) the price per pound to \$45. Keystone made a similar slash last January, American Chlorophyll in February. (Cost of producing the final product is placed at \$30-32/lb.)

**Down to Size:** One of the things turning the public's eye toward chlorophyll is the move Colgate made only a few weeks ago. It shaved prices on its chlorophyll toothpaste, making them the same as the prices on its regular type.

Consequently, Colgate's chlorophyll economy size was reduced from 89¢ to 63¢, the giant from 69¢ to 47¢, the large from 43¢ to 27¢. (Although the amount in toothpastes is about 1/10 of 1%, toothpastes absorb well





*Can These Unusual Properties of*

## **ACRYLAMIDE**

*Throw Light on Your Research?*

**Crystalline**

**Stable at room temperature without use of additives**

**Extremely soluble in water**

**Polymerizes easily**

**Forms water-soluble polymers and copolymers**

**Polymers can be cross-linked**

**Possesses an amide grouping which is reactive even after polymerization**

**Double bond condenses with alcohols, amines, mercaptans**

*Any bright ideas here?*

If so, it may pay you to look into Acrylamide, because...

**Already reasonably priced, its price trend is downward**

**Available in pilot-plant quantities**

**New and larger production facilities are under construction**

### **SAMPLE AND TECHNICAL DATA**

American Cyanamid Company  
New Product Development Department, Section B  
30 Rockefeller Plaza, New York 20, N. Y.

Gentlemen:

- ☐ Please send me New Product Bulletin No. 28  
☐ Please send me a sample of ACRYLAMIDE

Name

Position

Company

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# Plenty of Low Cost Electric POWER

Turns the  
wheels of  
**INDUSTRY**  
in  
**IOWA**

THE PACE OF INDUSTRY in Iowa is accelerated by plenty of low-cost electric power. A huge power network, called the Iowa "grid" which interconnects many of the state's generating plants stands behind this assurance. No industrialist need fear a power shortage in "the land of the gold that grows" where farsighted power systems always have a surplus of electrical energy, even over peak consumption periods. In addition, Iowa offers a skilled labor supply, excellent transportation facilities and a friendly state government. Learn more about Iowa as the ideal location for your new plant . . . write for your copy of "Industry's Road to Opportunity," 444 Central National Building, Des Moines 9, Iowa.

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## A New Light on Stearic Acid

Candles burn cleaner when made with a Stearic Acid of low ash content. Century Brand Stearic has the lowest ash content of any on the market today. Careful selection of raw materials and care in processing make Century Brand Stearic Acid the best for candles.

Stearic Acid Esters are whiter when made with Century Brand Stearic Acids because of their exceptional heat stability. Glycerol Monostearates with colors of 5 Yellow and 1.0 Red (5 1/4" Lovibond) have been produced with Century 1220 Double Pressed Stearic Acid without bleaching.

Cosmetic creams and lotions stay lighter when made with Century Brand Supra Grade Stearic Acid. An iodine value of less than 1 combined with excellent stability make Century the top Stearic Acid for cosmetics.

For these and other uses there is a grade of Century Brand Stearic Acid to meet your requirements.

**W. C. HARDESTY, CO., Inc.**  
**Century Stearic Acid Products, Inc.**

41 EAST 42nd STREET, NEW YORK 17, N. Y.  
PLANT: DOVER, OHIO  
In Canada: W. C. Hardesty Co. of Canada Ltd., Toronto

## SPECIALTIES . . . . .

over 50% of total chlorophyll production.)

This would seem to indicate Colgate's chlorophyll type was losing sales and the price cut was the answer. But, if so, it's questionable whether it is losing to anti-enzyme types or to competitive chlorophyll types. Other makers of chlorophyll types naturally think it's the latter.\* That would include: American Home Products' Whitehall Pharmacal (Kolynos), Block Drug Co. (Amm-i-dent), Bristol-Myers (Ipana), and Lever Brothers (Chlorodent and Pepsodent Chlorophyll).

Regardless of what prompted Colgate, the huge cuts put all but low-cost Kolynos on the spot pricewise. And Lever Bros. is now farthest out on the limb—its chlorophyll toothpaste prices remain the same as Colgate's former ones.

Up to ADA: But it's not only lower price of chlorophyll dentifrices that will challenge the position of the regulars. The American Dental Assn., which expressed skepticism as to the efficacy of the anti-enzyme ingredients when they first hit the market last fall, is now following through on its attack.

The ADA Journal last month carried a report in which two Georgetown University School of Dentistry professors state they have been unable to obtain results comparable to those reported by Northwestern's Fosdick and his associates with sodium N-lauroyl sarcosinate. In the same issue, an editorial declares: ". . . the anticariogenic miracle promised for the anti-enzyme dentifrices may well turn out to be not a miracle but a mirage . . ."

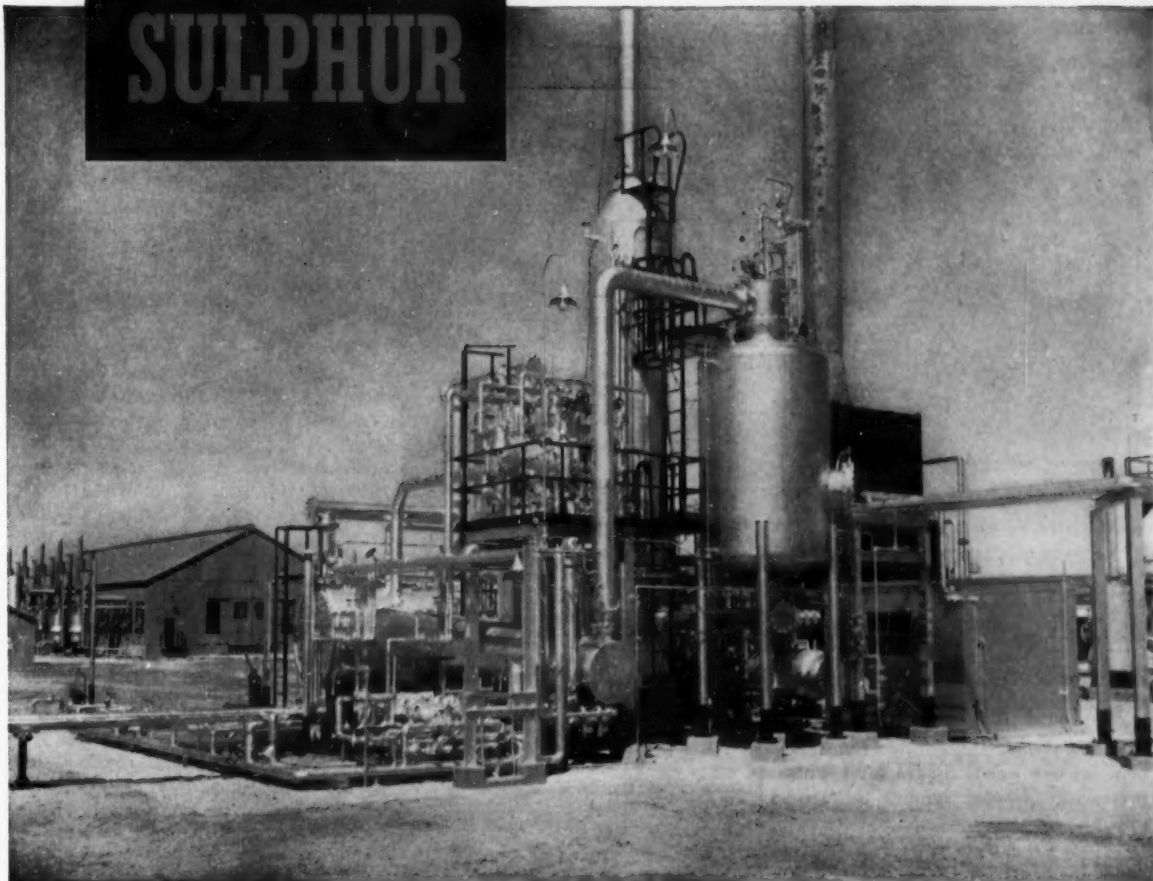
Thus, it would appear the anti-enzymes are running into the same thing that punctured the chlorophyll bubble—insufficient scientific and medical backing. (Chlorophyll toothpastes claim only deodorizing properties; little is said about preventing cavities.)

**Hard Pull for Sales:** Speakers at the upcoming ACS symposium will discuss, among other things, the chemistry of chlorophyll, the mechanisms of odor reduction, and the medical application of water-soluble chlorophyll derivatives.

The program indicates the solid scientific interest chlorophyll has perked. It's plain, though, that the height of the chlorophyll fad has passed; any return to '52's high sales would be a long, hard pull.

\* Some say the move was prompted by Procter & Gamble's new dentifrice, Gleem, going national last month with a tremendous promotion push behind it. In a test market, it is said to have grabbed 45% of sales at the onset, then held onto 30%.

# SULPHUR



*Installation at Stanolind Oil and Gas Company, North Cowden, Texas*

## **Girdler plant turns waste into profit . . . recovers over 90% of the sulphur in the hydrogen sulphide**

**H**YDROGEN SULPHIDE, formerly flared at the gasoline plant, serves as the feed material for sulphur production. After the removal of hydrogen sulphide from the sour gas by the Girbotol process, 17.7 long tons per day of elemental sulphur are recovered by this two-stage plant. An important by-product of the operation is the production of 3,000 pounds per hour of steam for export.

One man can operate the average Girdler sulphur plant. Instruments control the process, which is practically automatic. If you are now wasting hydrogen sulphide from sour refinery gas, natural gas, or liquid hydrocarbons, call the nearest Girdler office for complete information about this profitable process.

**GIRDLER DESIGNS** processes and plants

**GIRDLER BUILDS** processing plants

**GIRDLER MANUFACTURES** processing apparatus

### **GAS PROCESSES DIVISION:**

Chemical Processing Plants  
Hydrogen Production Plants  
Hydrogen Cyanide Plants  
Synthesis Gas Plants  
Carbon Dioxide Plants  
Gas Purification Plants  
Plastics Materials Plants

Sulphur Plants  
Acetylene Plants  
Ammonia Plants  
Ammonium Nitrate Plants  
Hydrogen Chloride Plants  
Catalysts and Activated Carbon

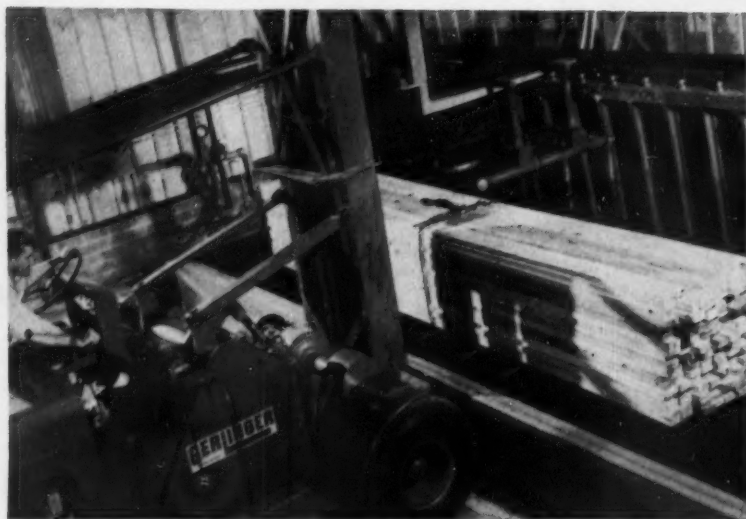
*The* **GIRDLER** *Company*

A DIVISION OF NATIONAL CYLINDER GAS COMPANY

**Louisville 1, Kentucky**

**GAS PROCESSES DIVISION:** New York, Tulsa, San Francisco • In Canada: Girdler Corporation of Canada Limited, Toronto, Canada





LUMBER DUNKING: For home life insurance, chlorinated phenols.

## Longer-Lasting Homes

In Houston, Tex., this week carpenters are putting the finishing touches on a string of new houses—conventional in styling and construction, except for one point: they're built with preservative-treated lumber throughout.

As builder Thomas Weir points out, chemically treated wood for building isn't brand new. But heretofore its use has been largely confined to commercial building, or, to a limited extent, to a few expensive private residences. Weir is putting it first on 10 houses in the \$25-35,000 price range, hopes to start soon on 100 houses priced at about \$10,500.

Although varying with size and amount of brick used, costs of treating the wood in an average home run about \$300, Weir says. This includes pentachlorophenol in a 5% solution of petroleum oil for foundation timber, and a treatment tradenamed Woodlife for the frame timber, exterior finish lumber, finish flooring, and interior millwork—even roofing shingles.

The treatment with these chemicals gives the wood high insect resistance, greater water repellency, and doesn't prevent painting. These factors play a particularly important role in the South and Southwest, but in other areas are of greater concern than is generally realized.

**Point to Leading:** For Weir, there's a lot more to making these houses with treated lumber than just improving their salability. He's developed the processes of treating the wood, and stands to gain if more builders

use them. His Wood Protection Co. (Houston) and half a dozen related firms in other scattered areas custom

process lumber, sell treated wood and the preservative chemicals to contractors and builders.

Pressure treatment with pentachlorophenol, in which the wood retains about 6 lbs. of chemical per cubic foot is recommended. Retention of 24 gal. Woodlife per 1,000 board ft. of lumber is suggested. (Woodlife is a mixture of 10% by weight of water-repellent gums and resins, and 5% chlorinated phenols—penta-, tetra- and 2-chlor-ortho-phenylphenol—in mineral spirits.)

Typical Weir processing makes use of a covered tank into which the wood can be lowered by fork truck (*see cut*). Lumber is immersed for about three minutes by his Dri Vac procedure, then removed. A scale measures the amount of chemical the wood picks up. Storage tanks of both Woodlife and pentachlorophenol lead to the dip tank, so that it can serve alternately for either treatment.

With an eye to the vast market for wood-treating chemicals in home building, Weir admits the chemicals aren't always needed. But he figures the extra durability the treatment yields pays for the extra outlay.



## Polyesters for Star Glazing

PERMISSIBLE, but hardly recommended, is stomping on the new reinforced plastic skylights made by Molded Insulation Co. (Philadelphia). The lightweight skylights have a curved surface, and pressure from above only jams them tighter into their frames, the maker says. Translucent rather than transpar-

ent, the 3x6-ft. closures are resistant to heat and shock.

In addition to skylights, Molded Insulation last week showed off its new windows, also made of glass-reinforced polyester (resin supplied by Naugatuck Chemical). The new windows bulge out somewhat, have a multiple-diamond pattern.



## Here's a One-Man Bulk Materials Handling System for Your Plant...

In the Dempster-Dumpster System of bulk materials handling only one man, the driver of the truck-mounted Dempster-Dumpster, is required for operation. The Dempster-Dumpster serves scores of detachable Dempster-Dumpster Containers. Container capacities range up to 4 times that of conventional dump truck bodies and each container

is designed to suit the materials to be handled—be they solids, liquids or dust . . . hot or cold . . . bulky, light or heavy. You simply place these containers at convenient materials accumulation points inside or outside buildings. When loaded each container is picked up, hauled and emptied (as shown above) or load set down intact. Entire op-

eration is handled by hydraulic controls in cab.

Containers shown below are just a few of the many available or that can be built to meet your needs. They enable you to handle, at tremendous savings, materials of many descriptions—trash and waste materials, raw materials, finished products, etc.—with only one truck and only one man, the driver.

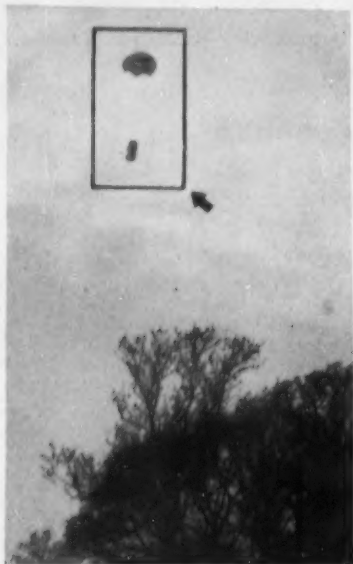
Without question, the Dempster-Dumpster System is the most economical and most efficient method of plant materials handling by truck ever devised!

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Dempster-Dumpster Handles Scores  
of Containers... All Designs... All Sizes

**DEMPSTER BROTHERS, 234 Dempster Bldg., Knoxville 17, Tenn.**



**DROPPING IN:** Welcome help in the fight against tsetse flies.

## Pesticide Parachutes

Like a surprise raid by air-borne troops, pesticide smoke bombs will soon be chuted into Central African lands made virtually uninhabitable by the tsetse fly. The British firm of Tiltman Langley Laboratories Ltd. (Redhill, Surrey, England) is now making the parachute-equipped, pesticide time bombs that may help open up some 4 million sq. miles of Dark Continent.

The bomb Tiltman researchers\* have developed holds 5 lbs. of benzene hexachloride or DDT. It's in a two-compartment container and is ignited by a time fuse-percussion cap that can be set for any time up to 14 hours. A 21-in. parachute lowers the bomb at a 50 ft./second rate.

The clock mechanism is preset for a time deemed favorable for the insecticidal cloud release. Then the canisters are loaded on an airplane (such as the Bristol Freighter or the Consolidated Catalina). The bombs are dropped from about 400 ft., at 120-200 mph. They're released one at a time; about 1,285/12 sq. mile area is a typical "planting." The chutes are opened by a static line.

**Fly Chaser:** The new insecticide dispenser is no reflection on the efficacy of bug-killing chemicals. Rather, the invention came about because other dispensing systems failed to do the job.

Ground spraying is virtually impos-

sible, and meteorological conditions limit the effectiveness of conventional aerial spraying. It's hoped that by dropping these bombs, designed to release smoke after the planes have left, and during most favorable atmospheric conditions, a more effective job can be done.

In addition to English interest, French, Belgian and Portuguese authorities want to rid their Central African territories of the tsetse fly. Medical science has contributed one weapon to the fight—the drug Antrycide (reported to be 4-amino-6-[2-amino-6-methyl-4-pyrimidylamino] - quinoline-1,1'-dimetho salts) for combating infections of sleeping sickness (trypanosomiasis) carried by the tsetse.

It will take a lot of coordinated work by all branches of science to convert the 4 million sq. miles of land into a habitable area. But the stakes are high—and so is the effort.



**SMOKEBOMB ASSEMBLY:** New twist in aerial application of pesticides.

## Underground Fight

**Chalk up one more** for the farm chemical producer. A new chemical for the control of white tip, a rice disease, is being commercially offered this month by Stauffer Chemical.

Tagged N-244, the new pesticide (chemically, 3-p-chlorophenyl-5-methyl rhodamine) is made by Stauffer Chemical Co., which has been doling it out in experimental quantities for the past three years, mainly to agronomists in Arkansas, Texas and Louisiana.

It's proved so effective in killing the microscopic ell-worm or nematode that causes white tip that one treatment, costing about 50¢/acre, lasts almost five years under favorable conditions.

**No Deficiency:** Much of the basic work on white tip control was done by E. M. Crally at the Arkansas Agricultural Station. In 1948, he pinned down the nematode that caused the yield-lowering disease—until his discovery, it was thought that the blight was due to a soil deficiency. Then came the job of finding a suitable control.

N-244 is sold as a 10% active ingredient slurry, and is applied to the rice seed. About 4 oz. of the slurry will treat 45 lbs. of rice. The low-cost treatment boosts harvest about 10 bu./acre, Crally tests show.

With one score to its credit, N-244 is apparently just getting warmed up. Testing is being carried out on its nematode-killing properties in growing asparagus and tobacco.

**Anti-Arthritic Agent:** Butazolidin, a nonhormonal anti-arthritic agent marketed by Geigy Chemical Corp.'s pharmaceutical division, has been accepted by the American Medical Assn.'s council on pharmacy and chemistry. Chemically the drug is 3,5-dioxo-1, 2-diphenyl-4-n-butyl pyrazolidine. It's given in tablet form.

**New Quarters:** Products Packaging, Inc., (Cleveland) has moved to new and larger quarters at 6400 Herman Avenue, which has production space of 52,000 sq. ft.

**Record:** Paint, varnish and lacquer sales for 1953 were \$1,402,277,000, according to the Bureau of Census. The figure exceeds the previous record of 1952 by more than \$60-million or 4.6%. Other figures: industrial sales totaled \$561,834,000 or 10.2% over 1952, while trade sales were \$840,443,000, an increase of 1.2%. National Paint, Varnish and Lacquer Assn. expects the 1954 dollar volume to increase 3-4% over 1953.

**Two Starches:** National Starch Products (New York) has two new products:

- Cato Starch, a new type of starch based on a cationic starch derivative and developed for wet end addition on the paper machine. It's said to be effective in improving strength factors.

- Carboxymethyl Starches, which are sodium salts of carboxymethyl derivatives of starch. The company claims they have film-forming proper-

\* Also contributing to development of the smoke bomb were Imperial Chemical Industries, Ltd.; Leabridge Industries Ltd.; The Metal Box Co. Ltd.; and Smiths English Clocks Ltd.



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Specify *Admex 710* in your compounds and you also get the plus-value of stabilizing characteristics not found in any other type of plasticizer. Don't overlook this added factor of protection against discoloration due to heat and light. No other plasticizer on the market does so many things so well.

Send today for technical bulletin and evaluation samples. See for yourself how *Admex 710* can help improve your products, increase customer satisfaction, and—at the same time—lower your production costs!

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SCIENTIFIC SHORTCUT**

with *Admex 710*

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Linseed Oil, Soybean Oil, Fish Oil, Paint Vehicles,  
Fatty Acids, Fatty Alcohols, Hydrogenated  
Glycerides, Sperm Oil, Foundry Binders, Industrial  
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*These stock points are your assurance of quality materials...*

*...when you want them...where you want them*

**\*ALLOPRENE (Chlorinated Rubber)**

**\*CERECOLOR #2 (Chlorinated Paraffin 42%)**

Sodium Aluminate, Dry

Bleaching Powder, Tropical 35-37%

Ammonium Chloride

Sodium Cyanide, Egg Flake Powder

Urea, Technical 46%

Trichlorethylene, all grades

Sodium Bicarbonate, USP and Technical

**\*ICI Trade Name**

This is only a partial listing of the items we offer.  
Write for complete product listings.

**CHEMICAL MANUFACTURING CO.**

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Supplying heavy chemicals to American industry.

## SPECIALTIES . . . . .

ties that offer broad possibilities for calender sizing. They are white to light tan in color and are available in three viscosity grades, high, medium and low.

**Nonskid Toppings:** Two new nonskid safety toppings are now being marketed:

- **Pennsylvania Salt Manufacturing Co.** offers NeoFloor for use on concrete, wood and metal floors. The maker says it is a grit-like material anchored in a matrix of resilient neoprene, which is bonded to the floor with an adhesive primer. It is resistant to acids, alkalis, oils and is water-proof.

- **X-L Veneer**, a product of Monroe Company, Inc. (Cleveland), is a "synthetic, heavy-bodied plastic material, which contains special solvents and abrasive fillers." The company states that it can be used over concrete, wood, steel, tile, mastic or terrazzo floors. It's impervious to oil and grease, comes in tile red, green, two shades of gray.

**For Photo Prints:** A thin, sensitized aluminum sheet for making photographic prints with ordinary darkroom equipment has been developed by Horizons, Inc. (Cleveland). The company says the product, called Metal-photo, offers a relatively cheap method of producing such things as instruction plates, aerial maps, instrument scales.

**Motion Sickness Drug:** Nion Corp. (Los Angeles) has brought out a motion sickness preventive called Nio-Piracene. It contains prophenpyridamine and scopolamine hydrobromide.

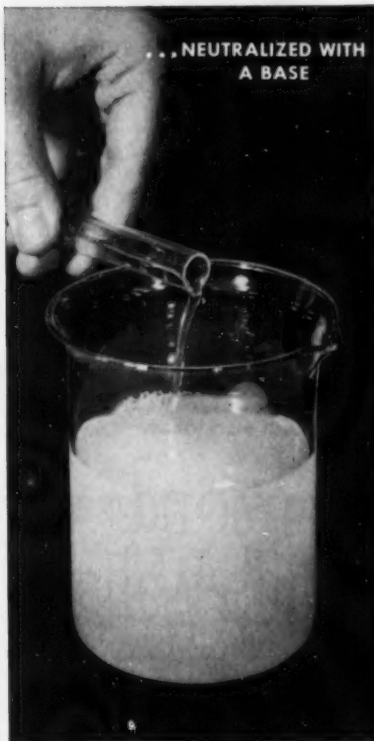
**Super Sticker:** Aliphatic-resin-based, rather than polyvinyl-acetate-based best describes the new Titebond glue made by Franklin Glue Co. (Columbus, O.). The wood adhesive (CW, Feb. 27) is claimed to combine qualities of PVAc glue with those of liquid hide glue, and to possess qualities that might find application outside the adhesive field.

**Copiers Note:** Charles Bruning Co. (Chicago) is producing a new diazo copy paper for office copying machines. It's said to give images with sharper contrast, truer reproduction, more uniform density than previously sold material.

**Mill Aid:** For textile scouring, dyeing and other mill applications, Maywood Chemical Works (Maywood, N. J.), is marketing a protein-fatty acid con-

Another unique, new development from

# B. F. Goodrich Chemical



## CARBOPOL 934

### 1% of new synthetic gum gels water

**T**HIS unique hydrophilic colloid offers many advantages to manufacturers of cosmetics, textiles, pharmaceuticals, paints, agricultural chemicals and latices.

It is exceptional in performance and versatility as a:

**Thickening Agent**  
**Suspending Agent**  
**Anti-Caking Agent**

Carbopol 934 is a free-flowing white powder which easily disperses in water to form a low viscosity, low pH solution. Neutralization results in a clear stable gel.

Carbopol 934 is outstanding in:

**Thickening efficiency.** It greatly exceeds that of other materials at low concentration.

**Ease of handling.** It is readily soluble and maintains maximum viscosity over a wide pH range.

**Uniformity.** It affords consistent results.

**Purity.** It provides an exceptional base for cosmetic and pharmaceutical compounding.

**Resistance to aging.** Not subject to hydrolysis.

**Resistance to bacterial or fungal degradation.**

**Viscosity stability.** It is relatively unaffected by aging or temperature variation.

For technical information and experimental samples, please write Dept. E-4, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

**B. F. Goodrich Chemical Company**  
A Division of The B. F. Goodrich Company

**Good-rite**  
CHEMICALS

GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON colors

March 20, 1954 • Chemical Week



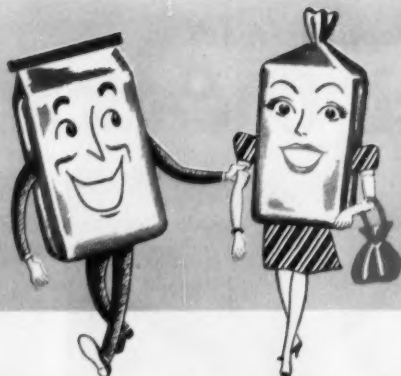
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"make it a habit  
to depend on Hammond."

### HAMMOND BAG & PAPER COMPANY

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Brilliant multi-color printing of your brands on Hammond Multi-Walls . . . combined with the uniform high quality of papers and materials used in their production, provide you with shipping containers second to none. Manufactured to exacting standards every step of the way, Hammond Multi-Walls are attractive and strong for safe, economical delivery of your products. Consult your Hammond man today.

# Hammond Multi-Walls



New in 1953

Now in 1954 Our Line of **ORGANIC SCINTILLATORS**  
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Those Presently Available Are —

#### 2,5-DIPHENYLOXAZOLE (Scintillation Grade)

M. P. 70-72°C

Form: Cottony White Needles

Fluorescence Max. 3800 Å

For use as a primary solute in Liquid  
Scintillation Counting

#### ALPHANAPHTHYLPHENYLOXAZOLE (Scintillation Grade)

M. P. 104-106°C

Form: Colorless Needles

Fluorescence Max. 4050 Å

For use as a band-shifter or secondary  
solute in Liquid Scintillation Counting

#### p-TERPHENYL (Scintillation Grade)

M. P. 211-212°C

Form: Colorless Crystals

Fluorescence Max. 3460 Å

The least expensive primary solute for  
Liquid and Plastic Scintillation Counting.

#### 1,1,4,4-TETRAPHENYLBUTADIENE (Scintillation Grade)

M. P. 104-106°C

Form: Colorless Needles

Fluorescence Max. 4320 Å

For use in combination with p-terphenyl  
in Plastic Scintillators.

#### PHENYLBIPHENYLYLOXADIAZOLE (Scintillation Grade)

M. P. 160-168°C

Form: White Crystals

Fluorescence Max. 3700 Å

Primary Solute of high solubility and  
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#### CADMIUM PROPIONATE, Anhydrous

M. P. 182-185°C

Form: White Powder

Solubility: 12g per 100 ml of

1:9 methanol-toluene

Highly efficient neutron captor.

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2800 PEARL STREET • BOULDER, COLORADO  
PRODUCERS OF FINE ORGANIC CHEMICALS

## SPECIALTIES . . . . .

densation product called Maypon K-903.

• Zalon is another detergent offered for textile cleaning, as well as general cleaning and cosmetic applications. It is a nonionic detergent, made by Zimmerman Associates (Guilford College, N. C.).

• **Sealer:** An extruded rubber-based sealer compound—for filling the cracks where metal components join, for example—is now offered by Minnesota Mining and Mfg. Co.'s Adhesives and Coatings Div. The expansion of the filler, EC-1209, can be controlled by the heat and time of curing—a 15-minute cure at 350 F will expand it 125%. EC-1209 is adherent, however, and can be used without curing.

• **Cooler Protection:** Kolmetal is the new protective coating developed by Emjay Maintenance Engineers (Rutherford, N. J.) for application to radiators and condensers. Kolmetal is finely pulverized aluminum powder in a "special plastic vehicle;" the metal is roughly 85% of the paint volume, and high impact strength and flexibility is claimed for the coating. Typical application of the product is on radiators that must be immersed in contaminated seawater—conditions that corrode the tubes and cover them with slime in a relatively short time.

• **Youngster Specials:** Eli Lilly and Co. is introducing what it terms the first ethical vitamin product designed for "tweenagers" (5-12 year olds). Called Multicebrin Jr., the vitamins are packed in colorful capsules selected by Lilly's taste panel (CW, Feb. 6).

• Parke-Davis has a new butter-scotch-flavored form of potassium penicillin, especially adapted for treating children, but very acceptable for adults. Product is called Penasoid Suspension.

• **Thread Seal:** Dry pigment lubricants are now being included in the Teflon-based thread sealing compound made by Eco Engineering Co.'s Chemical Products Div. (Newark, N. J.). Graphite, molybdenum, sulfide, lead or copper pigments can be incorporated in the material. The compound, designed to prevent freezing of threaded joints in process lines, can be used on metallic or plastic piping.

• **Backing Bonder:** For adhering nylon or rayon to vinyl plastic backing, Claremont Pigment Dispersion Corp. (Brooklyn) is selling Vinyl Combining Adhesive, Code D-456. It can be applied by knife or printing process to

A major oil refining company on the eastern seaboard is building a catalytic reforming plant with capacity of 17,600 barrels per day....

... and PETROCHEM-ISOFLOW Furnaces will charge this 17,600 bpd plant.

A major oil refining company on the Texas gulf coast is building a catalytic reforming plant with capacity of 21,000 barrels per day....

## PETROCHEM-ISOFLOW Furnaces

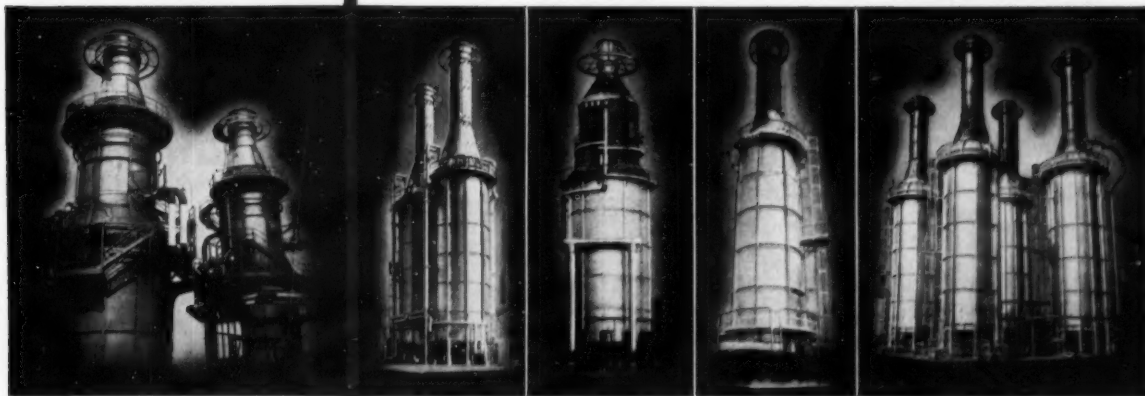
... and PETROCHEM-ISOFLOW Furnaces will charge this 21,000 bpd plant.

# purchased for two of the largest cat reformers

Our first cat reformer heaters went into operation three years ago. Since then, we have sold catalytic reforming heaters for plants ranging from 1,000 barrels to 21,000 barrels per day. If you anticipate the installation of a catalytic reformer of any type, you will profit by investigating PETROCHEM-ISOFLOW heaters for this service.

*More than 1150 Petrochem-Isoflow Furnaces are in operation throughout the world in the petroleum, chemical and allied industries... for all processes and for any duty, pressure, temperature and efficiency... and all*

**Petrochem-Isoflow Furnaces are most efficient by any comparison.**

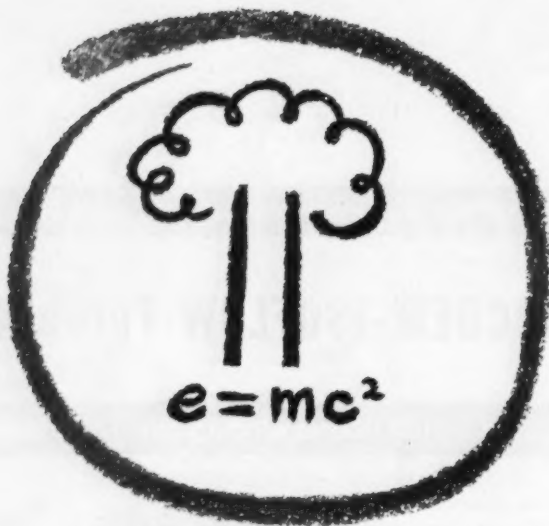


### PETROCHEM-ISOFLOW FURNACES

UNLIMITED IN SIZE ... CAPACITY ... DUTY

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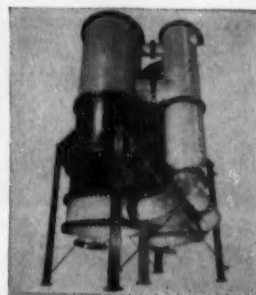
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These equations solve problems.  
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splitting headaches.

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The creative ability of Brighton's engineering and design staff  
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designers and producers of chemical processing equipment

## SPECIALTIES . . . . .

either backing or fabric, and is laminated under heat (350 F).

**Snap Test:** Calgon, Inc. has just marketed a handy test kit for determining the hardness of water in a short time. The pocket-size, 6-oz. kit contains enough chemical to run about 50-100 Schwarzenbach tests on water samples.

**Quick Picture:** "Some day my prints will come," sighs the harried editor—and speeding that day is a new photographic film introduced by Eastman Kodak Co. The new film, Kodak Royal Pan, is claimed to be twice as fast as conventional professional sheet film.

New emulsion technology, says Kodak, permits the increased film speed without sacrificing fine grain, contrast, or sharpness of image. Professional and press photographers are expected to make most use of the Royal Pan.

**Talking it Over:** Still debating the merits of 2,4-D are the cotton and rice farmers of Texas. Latest meeting, in Houston, underlined the fact that a principal objection to use of the herbicide arises from the application methods. Cotton farmers, claiming that 2,4-D has damaged their crops, say they don't object to the herbicide as long as it isn't sprayed on from airplanes.

**Grasshopper War:** Colorado is mobilizing a chemical war on 1,340,000 acres of rangeland threatened by grasshoppers. Poison mixtures of aldrin and diesel oil will be sprayed from the air when the eggs start hatching, probably about the middle of June.

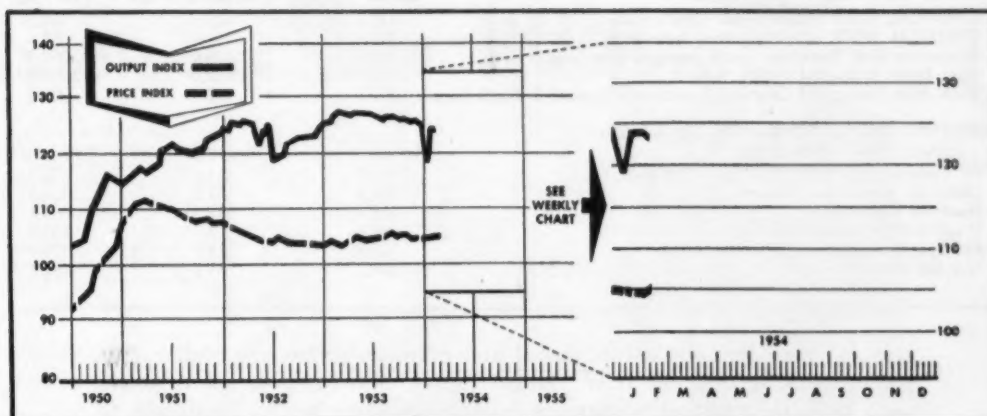
The campaign against the hopper will cost an estimated \$770,000, which will be split three ways, among the Federal government, the state, and the landowner. A fleet of airplanes, consisting of everything from Pipers to converted B-17's, will spread the pesticides.

**Paper Latex:** A butadiene-styrene latex for clay coated paper, Dow Latex 512-R, is being sold by Dow Chemical Co. It's an improvement on the firm's 512-K latex, previously offered.

**Double Dose:** Parke-Davis is putting a couple of new products on drug-store shelves: Bardase, a combination drug (belladonna, phenobarbital, Taka-diastase) for treatment of visceral and smooth muscle spasm, and Sytobex, a parenteral form of vitamin B<sub>12</sub>, for patients sensitive to liver extract.



# MARKETS . . . . .



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries  
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

## MARKET LETTER

It may be debatable whether or not chemical sellers are imbued with optimism concerning the current status of the market, but trade talk this week of any price cutting is singularly lacking. Actually, most chemicals are carrying a stronger tone now than they have in the past several weeks. That's particularly true, of course, with items getting a springtime lift in demand.

Take anhydrous ammonia for instance. Although most producers' stocks are at a good level, supplies in certain areas are getting tighter. Reason: step-up in nitrogen solutions for fertilizer use.

That the relatively new method of direct application of ammonia to the soil is on the increase is underlined by estimates indicating some 265,000 tons of the liquid form will be consumed this year. Compare that with the slightly more than 221,000 tons used during 1953.

And while many observers are sure new production facilities—for example, Grace Chemical's new \$20 million, 72,000 tons/year ammonia plant at Woodstock (Tenn.)—will forestall any general supply pinch, a few expect a repeat of last year's anhydrous ammonia fertilizer shortage. It'll come, they opine, during the next three months—the usual period of heavy demand.

Now, too, is the time for the push on pesticides. Demand for some specialty products is perking along at a good clip. Aldrin, dieldrin, Malathion—one of the newer items—and toxaphene are in for increasing takes. Rumors that price of the latter would soon be boosted are "completely unfounded," maker Hercules asserts. Schedules set in early January will more than likely hold for the entire season.

As for DDT, most makers and formulators are still waiting for the rush to start. There's a chance that this year—because of the heavy exporting—latecomers may face a temporary delivery delay. Domestic price is posted at 27¢/lb. for technical material. That, at least, is the situation this week.

## MARKET LETTER

### WEEKLY BUSINESS INDICATORS

|  | Latest Week    | Preceding Week | Year Ago |
|--|----------------|----------------|----------|
| CHEMICAL WEEK Output Index (1947=100)                                | 123.3          | 123.3          | 126.5    |
| CHEMICAL WEEK Wholesale Price Index (1947=100)                       | 104.6          | 104.6          | 103.6    |
| Bituminous Coal Production (daily average, 1,000 tons)               | 1,100.0        | 1,126.0        | 1,350.0  |
| Steel Ingot Production (1,000 tons)                                  | 1,616.0 (est.) | 1,652.0 (act.) | 2,288.0  |
| Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.) | 272.7          | 269.1          | 258.0    |

### MONTHLY INDICATORS—Wholesale Prices (Index 1947-1949=100)

|   | Latest Month | Preceding Month | Year Ago |
|---|--------------|-----------------|----------|
| All Commodities (Other than Farm and Foods) | 114.4        | 114.6           | 113.1    |
| Chemicals and Allied Products               | 107.3        | 107.2           | 103.6    |
| Industrial Chemicals                        | 118.1        | 118.4           | 113.1    |
| Drugs and Pharmaceuticals                   | 94.0         | 93.9            | 91.4     |
| Fertilizer Materials                        | 114.0        | 114.0           | 112.7    |
| Oils and Fats                               | 63.5         | 61.2            | 52.7     |

And this week, lead metal and pigment prices are higher. The sudden perk in demand (CW Market Letter, Mar. 13)—brought about, some feel, by whittled consumers inventories—has moved producers to hike tags gently. Two  $\frac{1}{4}$ ¢/lb. rises in the past few days establishes these new levels: pig lead, 13¢/lb. (N. Y.); red lead, 15½¢/lb. and litharge at 14½¢, both c.l.; orange mineral now 18.6¢/lb. (l.c.l.).

The zinc situation has also taken on a slightly firmer aspect. Along with last week's  $\frac{1}{2}$ ¢/lb. increase (to 9¾¢, E. St. Louis basis)—the first upward movement for zinc in more than a year—came the latest statistics from the American Zinc Institute.

The figures show that the rash of recent production cutbacks (CW, Feb. 27) is paying off. The rise in stocks was slowed down to less than 1,300 tons for the month of February. Compare that with the 19,000 tons during the previous month. Stocks on hand are still near 200,000 tons, but the possibility that the government may move in for stockpile purposes is contributing to the general optimism.

A bright new development in the leather industry (Aug. 22, '53) will likely have considerable impact on tanners' operations. The process, labelled Secotan, will, it's claimed, process leather in a few minutes instead of the weeks or months of conventional methods.

Nub of the system, a completely automatic machine, is now being assembled in Eagle Ottawa Leather Co.'s tannery at Grand Haven (Mich.) for extensive commercial runs. The process, although applicable to a wide variety of hides and skins, is currently concerned with the tanning, fat liquoring and dyeing operations involved in the manufacture of side leathers.

Usual aqueous solutions will be employed for the nonce, but eventual substitutions will open up a burgeoning outlet for chemical solvents.

More anent increasing potential ammonia capacity. Deduction (CW, Mar. 13) that by early next year producers could turn out fixed nitrogen at somewhat higher than 3.575 million tons/year is underscored by the Business and Defense Services Administration's just-released official estimate: BDSA pinpoints possible output at 3.604 million.

### SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending March 15, 1954

UP

|                                | Change | New Price |                                      | Change | New Price |
|--------------------------------|--------|-----------|--------------------------------------|--------|-----------|
| Eugenol, USP, bbls.            | \$ .25 | \$2.65    | Litharge, com'l, powd., bbls., c.l., |        |           |
| Lead, pig metal, prime, (N.Y.) | .005   | .130      | works, frt. equald.                  | .005   | .145      |
|                                |        |           | Potassium fluoride, dms., works      | .050   | .370      |

All prices per pound unless quantity is stated.

# RELY ON THE "C"-man...

The famous "Cutty Sark" built in 1869 set a record of 363 miles in one day. Twenty-two years before this clipper sailed the China seas, the Chase Bag Company set out on a never-ending journey—a continuous search for better packaging products.



Backed by 107 years of packaging experience

It costs you nothing, yet it's apparent in every Chase Bag...over a century of experience. The know-how is reflected in the sound recommendation of every "C" man, your capable Chase representative.

Oldest of all bag companies, Chase guards its reputation jealously. Today, every packaging

product that carries this respected name is the result of a 107 year search for perfection...the best materials, the finest workmanship, the fairest prices, the best service.

You cannot put your packaging problems in more capable hands. You cannot put your product in better bags.

over  
a century  
of know-how is  
behind  
every **CHASE**  
**MULTIWALL**  
**BAG**



## Low Cost Protection For Your Product

The modern low-cost way to protect your product is to package it in Chase MULTIWALL Bags. It's the economical package with all these features:

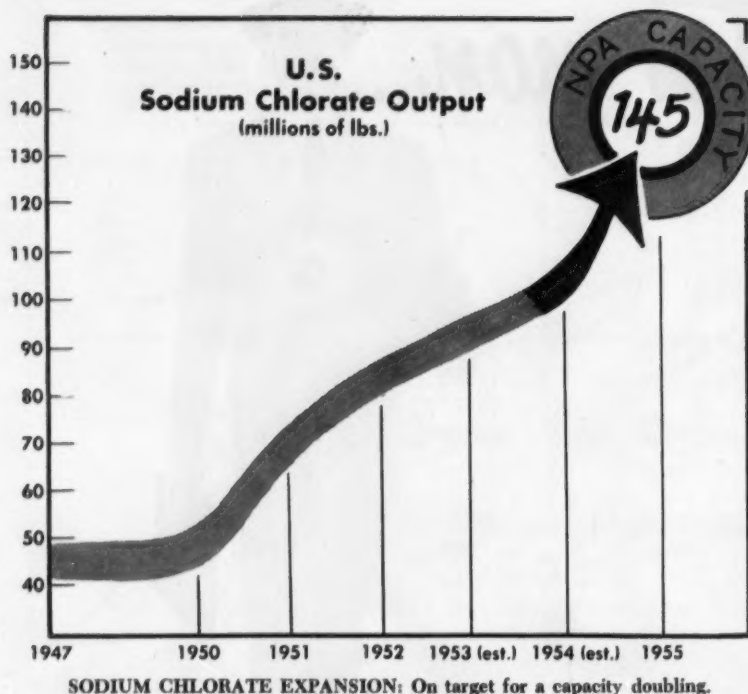
- Fine appearance
- Clean, colorful printing
- Dependable product protection
- More sales appeal
- Easy to stack and store
- Wide selection of sizes, types

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## New Lifts For Chlorates

With the official advent of spring this week, chemical sellers' attention once more focuses on some equinox-induced markets. One such group, sodium chlorate marketers, expect to funnel more than half the industry's output this year to weed-killing operations and for defoliation of cotton.

But if the present appears bright, the future outlook is even more so. For underlining the chlorate industry's confidence in what's ahead is this solid fact: U.S. capacity will have more than doubled in the five-year period ending next year.

Newest plant—that of pioneer Oldbury Electro-Chemical, at Columbus, (Miss.)—is due onstream in a couple of months, will up U.S. sodium chlorate-making potential by some 24-26 million lbs./year. Recent expansions, in progress or already in place, amount to approximately 75 million lbs./year, brings the total capacity within nudging distance—1-2 million lbs.—of the previously set National Production Authority goal of 145 million lbs. by 1955.

**Makers In, Shortages Out:** Until recently sodium chlorate perennially juttied out on most lists labeled "critically short." Industry burgeoning, however—some at government expense, some via certificates of necessity—have eased the chlorates into an ample supply category. Indeed, not

a few observers believe capacity may well lead demand for some time to come. But equally firm is the belief that growing demand for newer uses, particularly cotton defoliants and pulp paper bleaching, plus expected increases in military requirements for chlorate derivatives, will, over the long run, again crowd the country's chlorate-perchlorate facilities.

At the moment the chlorates are

also being turned out by three other U.S. producers: Pennsalt, Western Electrochemical and Cardox. Pennsalt and Oldbury make and sell sodium and potassium chlorates, while Western primarily manufactures potassium perchlorate. Cardox's output is relatively small, mainly captive.

Chlorates and perchlorates are usually discussed together; the two are closely related. Briefly, these products all start with the electrochemical oxidation of aqueous sodium chloride (salt) in diaphragmless cells to yield sodium chlorate, either for sale as such or as an intermediate in the manufacture of chlorates and perchlorates.

Since inception of sodium and potassium chlorates manufacture in this country (circa 1890), it's been an in-and-out industry for a raft of companies. Of the original three (National Electrolytic, North American Chemical, and Oldbury), the latter alone continues as a chlorates maker. The first two dropped out in the '20s. At about that time Oldbury was turning out sodium chlorate and potassium perchlorate, whereas all U.S. potassium chlorate requirements were being imported. In peacetime the major outlet for the latter—taking perhaps 75% of the available material—is the manufacture of matches. Most of the remainder filters into commercial explosives with relatively small amounts going to drugs and cosmetics.

During war, of course, practically all production is taken by the military.

It was the civilian demand, however, which spurred resumption of domestic potassium chlorate production in the middle '30s. Oldbury, which had stopped making the mate-

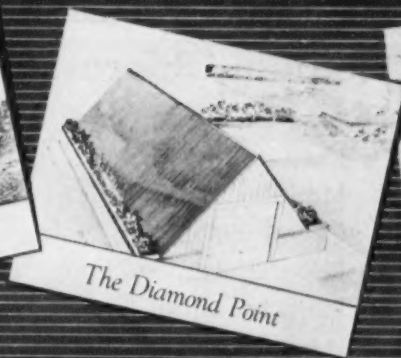


RIGHTS-OF-WAY: Fertile market for chlorate compounds.

## NEW PATTERNS FOR PROFITS



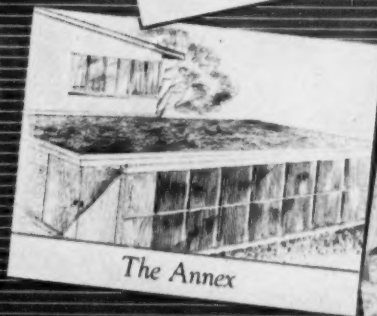
The City Gardener



The Diamond Point



The Sky Lighter



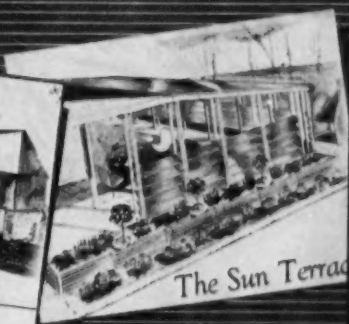
The Annex



The Bel Clair



The Greenway



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The Winter Set



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## MARKETS . . . . .

### Sodium Chlorate End Use Pattern\*

1954 (est.)

|   |      |
|---|------|
| Herbicide . . . . .   | 51%  |
| Manufacture of $KClO_3$ , $KClO_4$ . . . . .                    | 30%  |
| Cotton defoliation . . . . .                                    | 4-6% |
| Paper Pulp Bleaching . . . . .                                  | 4-5% |
| Misc. industrial (metals treating,<br>textiles, etc.) . . . . . | 10%  |

\* Figures are approximate.

rial some 30 years before, again added potassium chlorate to its schedules. Diamond Match, principally to protect its position as a major consumer, laid down a plant for its manufacture.

**War, Weed Boosts:** Thus at the outbreak of World War II. when imports from Germany were cut off, the U.S. was not completely bereft of the explosives ingredient.

With government encouragement, other makers came into the field. Western Electrochemical, for instance, began producing potassium chlorate at Los Angeles in 1941; but later, toward the end of the war, the company converted part of the government's basic magnesium plant at Henderson (Nev.) to chlorate and perchlorate, closed the Los Angeles operation.

Pennsalt stepped in with sodium and potassium chlorates; Cardox and International Mineral and Chemical also entered the arena. When the war was over Diamond and International bowed out leaving the present four.

Indicative of sodium chlorate use growth are these comparative figures covering the war period—1939, 12 million lbs.; 1945, near-23—an increase due, in large measure, to application as a weed-killer. Biggest target for the chlorate at the time was bindweed in 11 Western states.

Herbicides continue as the prime sodium chlorate outlet. Note this pattern of more recent growth

#### Sodium Chlorate Consumption Weed-killer and Defoliation (millions of lbs.)

|             |      |
|-------------|------|
| 1950        | 33.5 |
| 1951        | 40.3 |
| 1952        | 43.7 |
| 1953 (est.) | 50.0 |
| 1954 (est.) | 54.0 |

Buying, of course, is directly influenced by weather. Erratic climatic conditions during the last few months

may serve as a brake to this year's expected hike in consumption.

Probably a third of the herbicidal-earmarked quantities of sodium chlorates each year are used for eliminating annual and perennial herbage in maintenance and protection of factory sites, public utilities, petroleum and military areas, and on railroad rights-of-way. Chipman Chemical, Bound Brook (N.J.), rates the country's top spot as a chlorate compounds seller for these applications (see cut).

Though sodium chlorate is more active, on a comparable unit basis, than some other inorganic herbicides, (e.g., borates), and has shorter residual action in the soil, as well as being more soluble in water, it has one great disadvantage—its fire hazard when dried on foliage, clothing or spraying equipment.

That characteristic has led to the increasing popularity of herbicidal mixtures containing the chlorates and boron salts or other fire retardants.

The sodium chlorate compounds, although steadily inching up in pounds sold for weed elimination, have by no means a monopoly in the field. Competition gets keener from some more recent selective herbicides such as 2,4-D (2,4-dichlorophenoxyacetic acid), 2,4,5-T (2,4,5-trichlorophenoxyacetic acid), TCA (trichloroacetic acid) and the like.

Illustrative of the mushrooming acceptance of chemical weed-killers in general is the near-fantastic growth of 2,4-D. As recently as 1947 a scant 6 million lbs. were consumed; in five years that amount had increased almost five-fold.

Interest in newer organic herbicidal materials, too, for instance, substituted ureas like CMU (3-p-chlorophenyl-l-dimethylurea), bodes some chlorates competition.

But chlorates boosters don't appear too concerned over the market-en-





## Dependable Source of Chemical Raw Materials



*Albert J. Gilet, President (right), and Edgar A. Gilet, Treasurer, Gilet Carbonizing Co., Inc., display samples of wool after and before scouring.*

# “Wyandotte has never let us down in periods of short supply”

— Edgar A. Gilet, Treasurer, Gilet Carbonizing Co., Inc.

“Wool scouring is a service business. Consequently, the service we get from suppliers is all-important to us,” says Edgar A. Gilet, Treasurer, Gilet Carbonizing Co., Inc., Lowell, Mass.

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always at hand to see that our wants are taken care of, and that we are informed of new products coming out of Wyandotte Research that have possible value in scouring or carbonizing processes.”

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croaching. Their reasoning: the overall effect of newer—and more—herbicides has been to step up use of the chlorates by making the farmer more aware of the merits of weed-killing.

Then, too, in the defoliant scramble for a share of the estimated \$10-million market (CW, Aug. 22, '53), the chlorates may well emerge as one of the most important.

**Zooming Possibilities:** Predicting the possible potassium chlorate take of sodium chlorate is a cinch—it's expected to remain fairly steady in the foreseeable future. Practically all production goes into the relatively stable match industry.

On the other hand, market observers are looking into a cloudy crystal ball when it comes to forecasting the future for potassium perchlorate. Why: any significant increase in consumption will be related directly to government demands. And that involves some still hush-hush uses.

It's no secret, though, that chief volume taker of perchlorate compounds—for use as an oxidizer—is the jet assist takeoff (JATO) rockets program. It may be revealed also, that the materials are currently being evaluated for guided missiles, other rockets. Odds are another shooting war would propel potassium perchlorate demand skyhigh—and along with it a concomitant need for sodium chlorate.

Paper pulp bleaching, via chlorates-derived chlorine dioxide, while now taking perhaps no more than 4 or 5 million lbs./year, is being tabbed as the most likely potential big-time civilian market.

The use of chlorine dioxide for bleaching is, of course, no new development. The idea has been bruited about for more than a quarter of a century. In this country Mathieson has been promoting the material for many years for water treatment, bleaching of flour and pulp bleaching of rag pulp.

But lately, interest of pulp and paper manufacturers in using chlorine dioxide for the final bleaching stage (to increase the brightness level), is sparking a rapidly opening sodium chlorate market. Indicative of the trend to the nonstock degrading dioxide as the "topping" bleach, is this: in 1951 only one mill, International Paper, was using chlorine dioxide; by now 13 mills in the U.S. are using it or are definitely committed to do so.

Thus, though sodium chlorate production and consumption has been hefty in the past, current and future props—inspired by the seasons, by the military and by the mills—promise to be stronger supports for a lusty industry.



PIGMY CELL: After the military, a civilian rush?

## Quick with Cadmium

It may be too early now to calculate the impact of the new sintered-plate (see cut) type of nickel-cadmium battery on the nickel and cadmium markets. But at least one U.S. manufacturer is trying to edge this kind of battery into the automobile industry. Now Sonotone Corp., Elmsford (N.Y.), the original U.S. producer, is dickering with the Lincoln-Mercury Division of the Ford Motor Co., and the Chrysler Corp. for orders. Until these negotiations are settled, Sonotone is understandably mum on prices to the public.

Heavy-duty batteries are not being overlooked either. The New York Central Railroad is currently testing the leadless battery in a diesel engine.

The U.S. Navy, too, is interested; has purchased several thousand nickel-cadmium starting batteries for aircraft engines in 1953 from the French firm Société des Accumulateurs Fixes et de Traction (S.A.F.T.), a subsidiary of the Compagnie Générale d'Electricité, Paris.

Sonotone manufactured, during the past four years, over a half million of the sintered-plate units for the U.S. armed forces. Most were slated for use in guided missiles. It is only now that the new nickel-cadmium batteries are being freed for commercial sales in this country.

The potential demand has impressed more than one company, though Sonotone is in with four battery-producing plants in New York state. Under license from that firm,

and now also in production are American Bosch Corp., Springfield (Mass.), and the Canadian Aviation Electronics, Ltd., Montreal. Both American companies still have plenty of U.S. military requirements to fill.

Civilian potential outlets, too, look good. A conventional lead-acid battery may last only about 6 months in a hard-driven taxi; the new type, it is claimed, could spark the same hack for 10 to 20 years.

The replacement of conventional lead batteries every 2-5 years on a diesel locomotive runs into considerable expense. A nickel-cadmium battery might last 7 to 10 years in the same locomotive.

The new battery's one big advantage over the conventional lead-acid battery shows up when a heavy drain of current is needed in a short time.

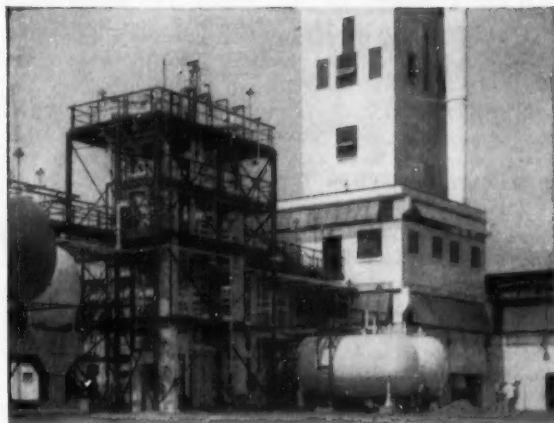
**Lightweight:** Economy in weight—as much as 20%—and less spacetaiking, on top of its amazing longevity, are added airplane and railroad interest-piquers.

There's a good chance that the new battery will have underseas duty; may replace lead batteries on submarines. The former does not emit noisome fumes on standing or discharge—a bugaboo of types now in use.

Between 7 and 8% of the new battery, including polystyrene casing, consists of cadmium. From 30 to 45% of weight is nickel (6% of it active), including connectors and other nickel "hardware."

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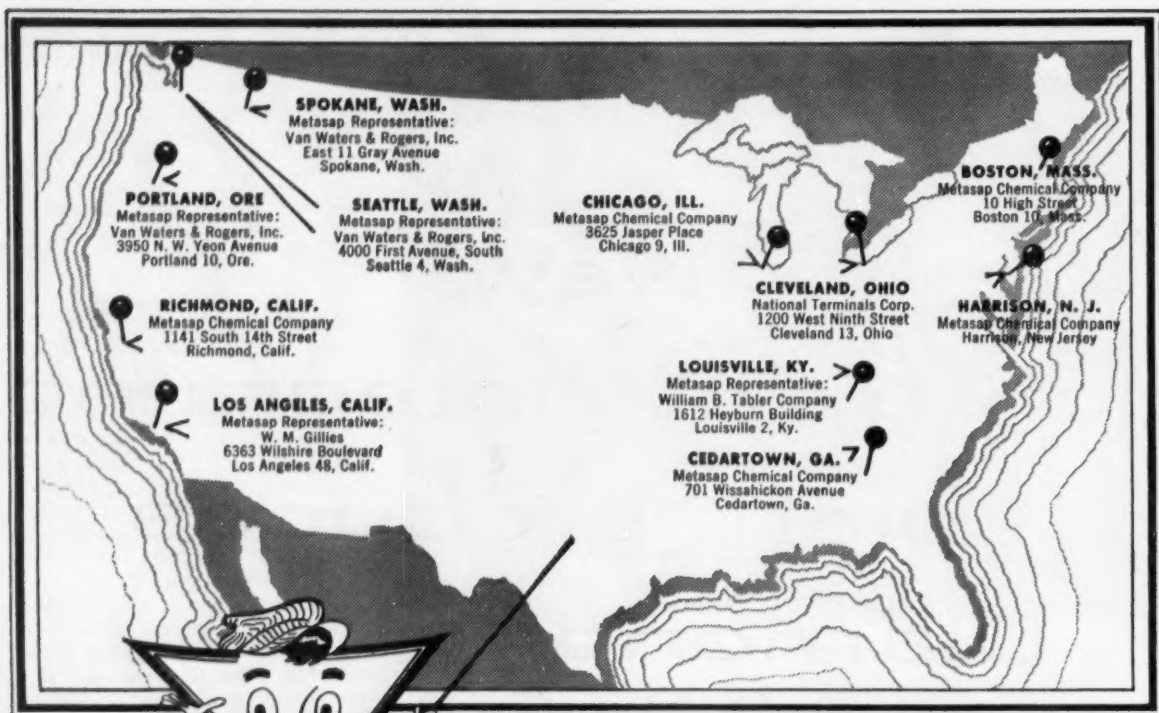
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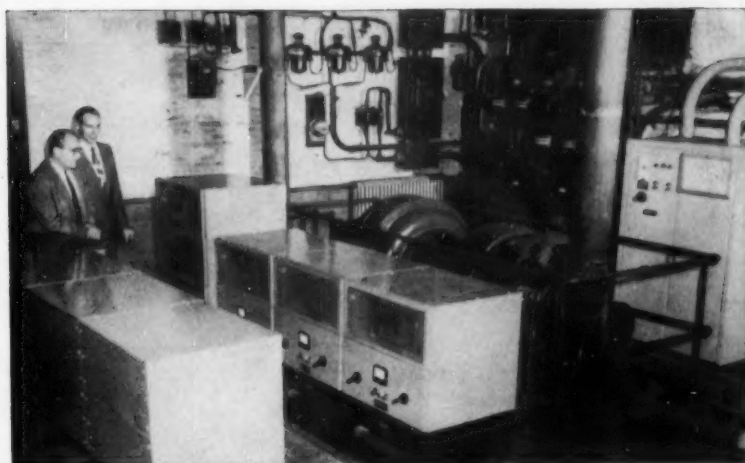
**Stocks at Cleveland, Ohio; Louisville, Ky.; Portland, Ore.; Seattle and Spokane, Wash.; Los Angeles, Calif.**



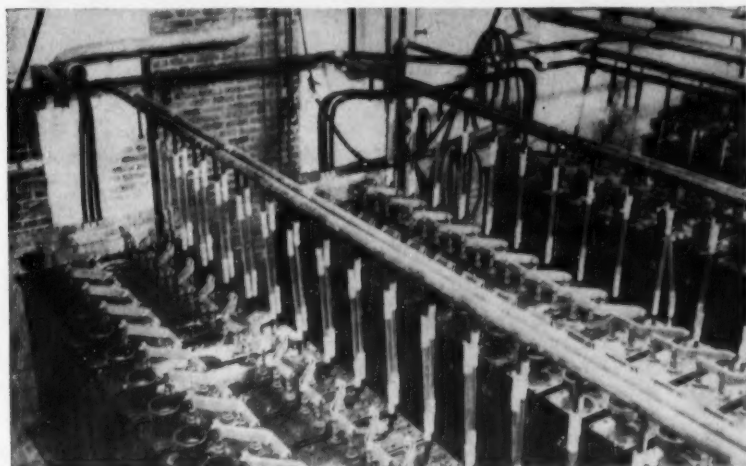
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# PRODUCTION . . . . .



GERMANIUM RECTIFIERS, used interchangeably with motor generator (black) . . .



. . . supply direct current to hydrogen-oxygen cell line at GE's Lynn River works.

## Into the Low-Voltage Gap

New germanium rectifiers widen the way to safe, efficient, low-voltage operation in the electrochemical field.

Aimed at the 50 to 125v spread, germanium power conversion units offer efficiency comparable to that of mechanical rectifiers, a life span potentially 20 times as great.

Hampered by temperature limitations, however, germanium rectifiers may best be remembered as the bridge to still-speculative silicon rectifiers.

Turning alternating current into direct current has become big business for electrical companies; doing it efficiently and at minimum cost in the 50 to 400v range—the operating span covering nearly the whole field of electrochemistry—has become a basic and almost-accomplished goal for chemical engineers (CW, Feb. 16,

'52). Covering the span with 95% efficiency, mechanical rectifiers have overcome the constant voltage drop of motor generators and mercury arc rectifiers, leave unanswered only the problem of frequent down time and maintenance caused by burned out contacts.

Now, General Electric is introduc-

ing its new germanium rectifier to the trade in an attempt to minimize this maintenance problem. Intended more as a supplement to the mechanical rectifier in the 50 to 125v range than as a replacement throughout the whole span, the new rectifiers operate without contacts at comparable efficiency, offer an operational lifetime potentially 20 times greater than the optimum 8,000-hour contact life of mechanical rectifiers.

**Side Lines:** Reversing the trend toward higher production voltages even more than mechanical rectifiers, the germanium units in most instances of already-operating plants would necessitate a division of electrochemical production lines into smaller power groups. To wit: a group of electrochemical cells on a 250v line would be broken into two groups, each on a 125v line using in all two germanium rectifier power conversion units in place of one mechanical rectifier.

Inherently attractive because of the added safety factor to workers and lower losses in leakage to ground, this arrangement with its lower voltages, says GE, also offers other benefits:

- In the event of any mechanical or operational failure, only half of the production lines would have to be shut down.
- Lower voltages would eliminate the need for expensive high-voltage equipment such as special switchgear and circuit breakers.
- Conceivably, substitution of two or three germanium power units for one mechanical rectifier could result in lower installation costs, for the germanium units are smaller, occupy less space and require no special mounting platforms or foundations.

Germanium rectifiers also maintain their high efficiencies practically independent of percent load, provide immediate rectification and lose little power as heat. And though still in the experimental stage, different combinations of the units promise the user a high degree of flexibility in obtaining additional capacities and various voltage and current ratings.

Moreover, says GE, the units' few controls offer simplicity of operation; the operator has practically no opportunity to turn the wrong knob. Electrical connections are easy to make, require little time and few tools.

The first germanium rectifier power conversion unit was installed last December in General Electric's Lynn River (Mass.) works, now converts current for GE's electrolytic hydrogen-oxygen operation. The second unit

went to Metal & Thermit Co. (San Francisco) a month later, is currently supplying direct current for electrolysis of tin solutions. A number of other companies are also interested but uncommitted. Dow and DuPont, among others, are currently investigating the possible use of germanium rectifiers, taking a sharp look at the economics involved. Pending the outcome of these and additional studies, says GE, is over \$2 million in potential orders.

**High Sensitivity:** General Electric is in no wise the only company to have shown interest in germanium rectifiers. Westinghouse and I-T-E Circuit Breaker Co. have also looked at the units but are reserving judgment. Westinghouse actually has one 100v water-cooled model in development but is uncertain as to the eventual disposition of the undertaking.

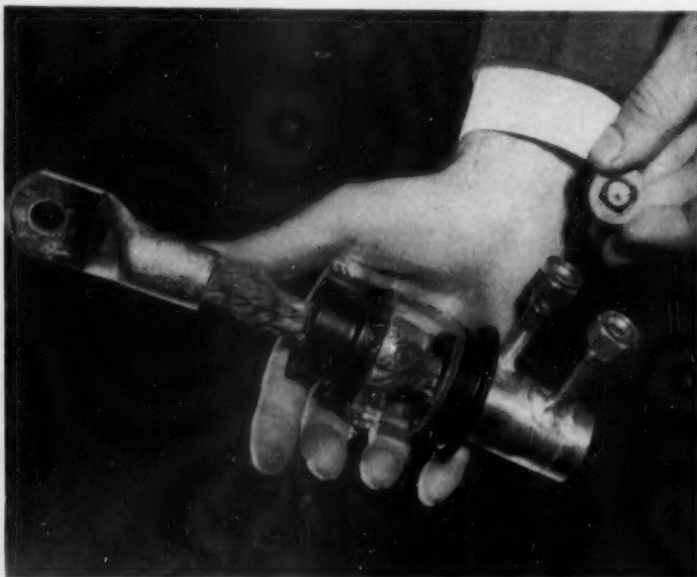
Like all metallic rectifiers, germanium units are temperature sensitive. Operated above 60 C, the rectifier's reverse resistance and life span drop sharply; reverse current leakage rises fast. To guard against this, the units are cooled by air, water or perchlorethylene, and must be protected against prolonged overloading.

Another drawback is the scarcity of germanium with proper rectifying characteristics. And though germanium crystals can now be drawn synthetically, it is a ticklish, expensive operation at best.

Too, impregnation of the germanium wafer with the exact amount of barrier "impurities" is another delicate operation. Excess barrier material cuts down on amount of effective current and voltage available; insufficient "impurities" open the way for reverse current leakage. Even now, GE engineers are working to find improved "impurities" and impregnating techniques which will result in more current through the cell and more voltage across it.

**Rectifier Bridge:** Ultimately, germanium may be remembered only as the bridge between the older metallic rectifiers and the still-unproduced silicon power rectifiers. That is the opinion of many researchers in the field, strange as it may seem, now the germanium power units are just emerging from their developmental cocoons.

In the electronics field, silicon diodes (rectifiers) and transistors are already working realities. Except as precursors, however, such units are of little value as power rectifiers to production engineers. When silicon power rectifiers are developed, they are expected to provide conversion coverage at efficiencies almost comparable to those of germanium, but over a



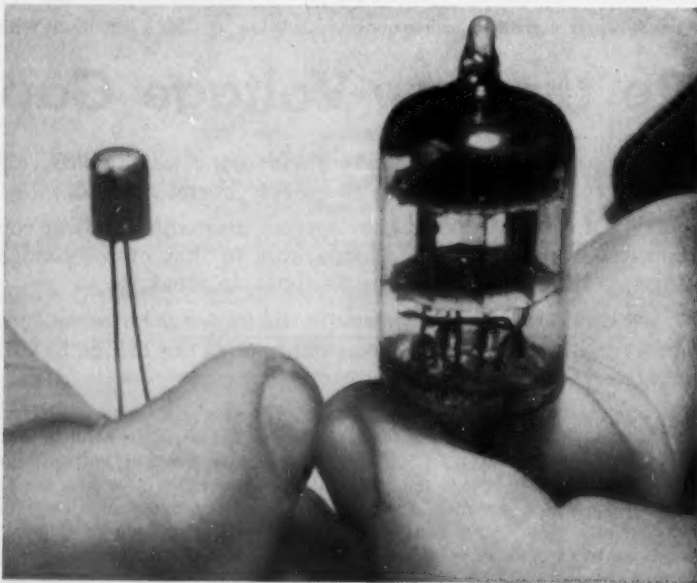
## Outsized Potential

PLAYING ROLES far out of proportion to their size, Westinghouse's germanium rectifier (top) and Bell's silicon diode (bottom) form a vital part of the continuing story of rectifier research.

The water-cooled Westinghouse rectifier, still in the development stage, uses a germanium wafer  $\frac{1}{8}$  in. in diameter and .015 in. thick, delivers 200 amp. direct current at 100v. Combinations of a number of these units into power conver-

sion sets could ultimately serve many of the electrochemical industry's requirements for direct current.

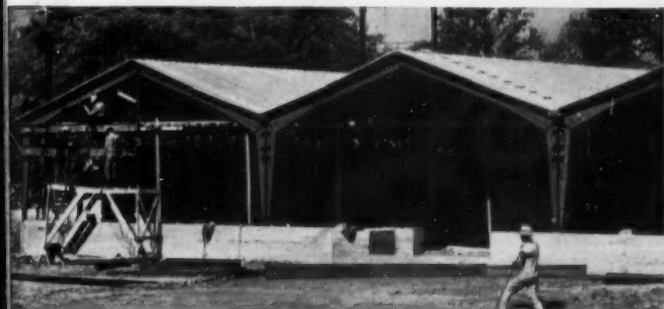
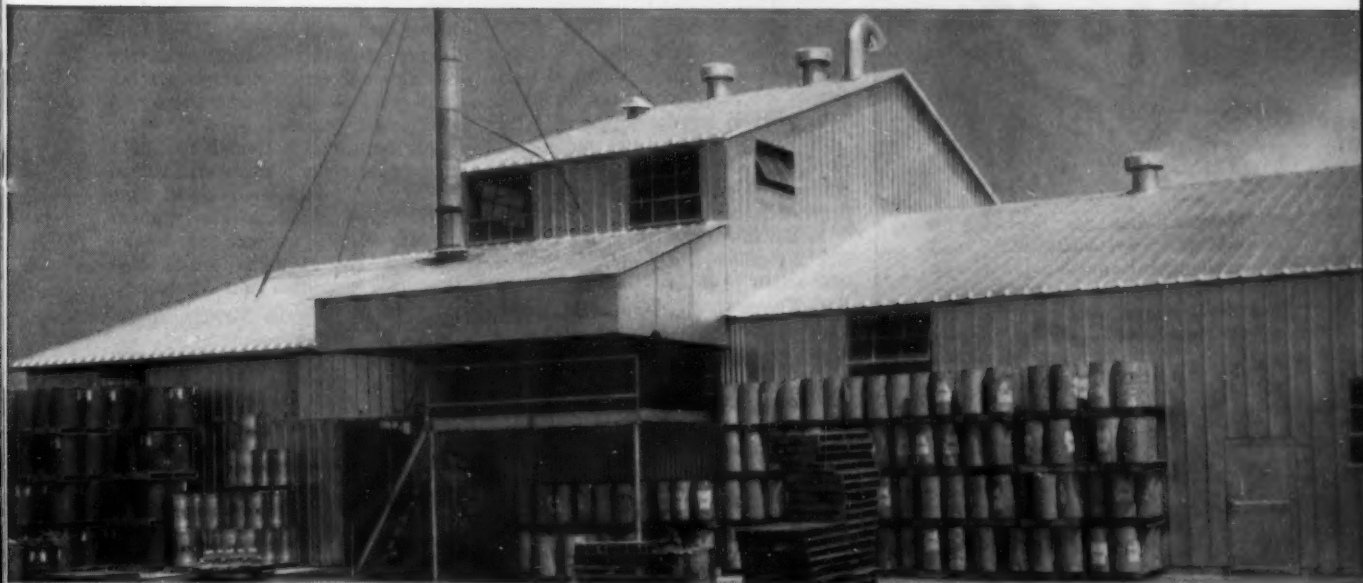
The Bell junction diode, using an encased silicon rectifying element no larger than a match head, currently fills the much smaller power needs of the electronics field. Its significance to the production engineer abides in its potential as a precursor for larger silicon power conversion units.





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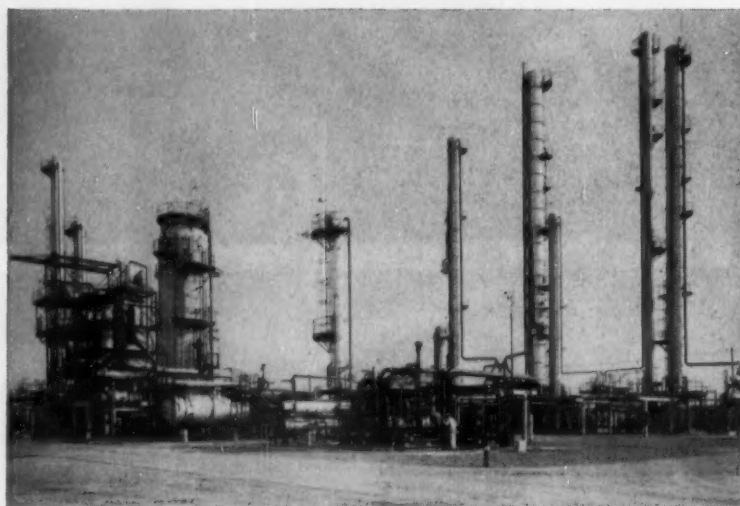
much greater temperature and voltage range. And while the forward voltage drop is expected to be somewhat higher in silicon, the reverse current leakage is expected to be much lower.

The silicon rectifier, says I-T-E's Otto Jensen, could provide serious competition for the mechanical rectifier, much more so than germanium. Interested in its development, I-T-E presently is doing little more than "looking over others' shoulders". Also silicon-curious, Westinghouse engineers are compiling reports on it.

Meanwhile, other firms have taken silicon rectifiers a step closer to power conversion realities. Among them: Bell Telephone Laboratories, which

did a great deal of original work on the germanium units, has developed a silicon alloy junction diode. It acts as a rectifier, serves as the electronic equivalent of a one-way switch. Radio Corp. of America also developed a device, its atomic battery (CW, Feb. 6), for converting intermittent energy into direct electrical current; a semi-conducting silicon crystal wafer serves as the rectifying unit.

But both the Bell and the RCA units and all other low-powered silicon diodes now on the market still have a wide gap of technological growth to span before they are ready to slip into the larger power rectification shoes of germanium and mechanical rectifiers.



STANDARD'S PHENOL PLANT: On absorption powers, a big test for the West.

## In and Running

The new process of making phenol that was supposed to stand the industry on its ears ran into some shake-down difficulties when it premiered in Montreal. That was at the B.A.-Shawinigan plant, which pioneered the Hercules-Distillers process of making phenol from cumene. Last week, Standard of California brought in the long-awaited unit using the same process at its Richmond (Calif.) refinery. That the B.A.-Shawinigan venture would run into some difficulties was almost inevitable. When the plant was dedicated, in fact, CW reported (June 13, '53): "The plant was officially declared onstream . . . but bringing a plant of that type up to capacity is a delicate operation and chances are it will be a while yet before it hits its rated stride . . ."

Presumably the wrinkles have been ironed out and the Richmond plant will start pouring out phenol to be marketed by Oronite, a Standard subsidiary. For one thing, Standard has spent considerable time investigating the production of cumene. That's been regarded for the most part as a "standard alkylation procedure." What's often overlooked is that making cumene for gasoline use and making cumene as a feedstock for a phenol plant present different problems. The Standard plant will employ a process developed and licensed by Calif. Research Corp., another Standard subsidiary. Essentially, it's a liquid phase reaction of propylene and benzene on a phosphoric acid catalyst.

The cumene will be made at Standard's El Segundo refinery. From there,

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## PRODUCTION . . . . .

it goes to Richmond, where it's oxidized with air to form cumene hydroperoxide. In the presence of acid, the hydroperoxide disproportionates into phenol and acetone. The acid cleavage produces phenol with an over-all yield of 80%; the ratio of reaction products is 57 parts phenol, 34 parts acetone, 6 parts alpha-methyl styrene, 3 parts acetophenone.

Standard's plant is unique on several counts: although B.A.-Shawinigan was the first to employ the process, Standard is the first in this country. And it also claims a first for doing it from petroleum sources entirely. For while the Canadian plant employs coal-tar benzene to make the cumene, Standard will use platformer benzene as a starting material.

Standard estimates 60% of the phenol end uses are represented by phenolic resins for laminated wood, wood waste boards and rock wool and glass wool insulation binders. The Pacific Northwest has long been a big customer for phenolic resins, but whether the Western market can absorb Standard's 35 million lbs. on top of Monsanto's 22 million from nearby Avon (CW, Oct. 24, '53) is a question that's currently keeping market researchers awake nights.

## EQUIPMENT . . . . .

**Motor Valves:** Minneapolis-Honeywell Regulator Co.'s (Philadelphia) latest offering to the trade is its series 800 diaphragm valves. Motor operated, the valves are designed to permit tight shutoff, offer automatic two-position or proportional control. Through proper choice of valve materials, declares M-H, a wide variety of materials can be handled with little wear or corrosion. Further information together with illustrations can be obtained by writing for specification sheet 410-2.

**Booster Pump:** For those low-pressure ranges where single-stage vacuum pumps show poor volumetric efficiency, Kinney Manufacturing Div., New York Air Brake Co. (Boston), is introducing its new mechanical booster vacuum pump, model MB. Combined with a single-stage pump, Kinney claims, the unit provides a wider high-vacuum range at lower power consumption than has been previously realized.

**Hafnium Hurdle:** One reason for the shortage of information on hafnium compounds has been the scarcity of the material itself in pure form. Recently, processes developed at Oak Ridge National Laboratory (Oak

Ridge, Tenn.)—operated by Union Carbide for the Atomic Energy Commission—have led to increased production of pure hafnium, more data on the properties of its various compounds.

Hafnium carbide, synthesized from pure hafnium oxide and carbon, is the latest in the series of hafnium compounds now undergoing tests. Fingered as a superrefractory compound through literature searches, the carbide is now proving itself out in the Ceramics Dept. at ORNL. It compares very favorably, say researchers, with other carbides in industrial use today. On a hardness scale where diamonds register 8400 and boron carbide shows 2400, hafnium carbide comes through with an average 2913.

**Thin Silver:** Using Sendzimir rolling mills capable of rolling at 300 fpm, American Silver Co. (Flushing, N. Y.) engineers claim they have the answer to the problems of obtaining close tolerances ( $\pm .0001$  in.) with 18% nickel silver strip in high production runs. This, says ASC, should prove good news to the process industries, which find the compound's inertness of value in diaphragms, instruments and other processing equipment.

**Full Circle:** The latest innovation in versatile conveyors is now in operation at Ciba States Ltd.'s new Toms River (N. J.) plant. Described as a roundabout conveyor, the unit both fills and empties the plant's powerhouse coal silos; incoming coal is picked up by the ascending section, discharged as the conveyor travels horizontally across the silos' top. The roundabout conveyor then rolls on down and under the same silos, picks up coal from beneath the silos and carries it to another conveyor that finally feeds the coal to boiler furnaces.

**Resistant Bearing:** Chemical & Power Products, Inc. (New York) is now marketing its style FM-4 bearing compound. Specially compounded of Teflon, glass, graphite and an inert lubricant, the new material, C&P says, is highly suitable for use in bearings and bushings in operations where the material comes into contact with corrosive surroundings.

**Automatic Leveler:** The new Robin-tronic Level Indicator, claims maker Hewitt - Robins, Inc. (Stamford, Conn.), will eliminate accidental overfilling or emptying of bins and other storage units handling bulk

chemicals, ores and like material. The device consists of a remote control unit and a small radio transmitter housed in a steel probe. The probe is placed at the level where the flow of material is to be halted; stored material rises and envelopes the probe—or drops and exposes it—and thus creates a change in the surrounding density, which distorts the signal being sent to the remote control unit. This change in signal sets off an alarm or trips the lever, which regulates the flow of material.

**Emergency Light:** For use in the event of power failure, the new model 200X Sentry-Lite, declares maker Hobby & Brown Electronic Corp. (Rockville Centre, N.Y.), will provide 10,000 candle power for more than 12 hours of continuous operation. The unit operates on a battery, features an automatic recharger for keeping the battery up to peak capacity.

**Fluoros for Sight Glasses:** Out from Minnesota Mining and Manufacturing Co. is a new liquid fluorochemical for use in sight glasses of force feed lubricators. Claims: It has a long life, does not become cloudy or leave deposits on the surface of the glass. Tagged Fluorochemical 101, the fluid is aimed as a replacement for the conventional glycerine or glycerine-water mixtures used for the purpose. The fluid says 3M, has been tried out in plants for periods of 9 months to a year without the necessity for cleaning the sight glasses.

**Royalty Cut:** Frankly aiming to broaden the market for its polyisocyanates in elastomer-based adhesives, Du Pont last week cut the royalty rates on the use of the compounds for that purpose. At present, Du Pont has agreements that have 11 years to run with over 60 firms. They call for a royalty payment of \$1.50/lb. of polyisocyanate in the licensed adhesive. This has been cut to 75¢/lb. Coupled with recent price reductions on the polyisocyanates themselves, that should open doors for the adhesives.

**Quarry Storage:** Esso Standard has decided to go ahead with the idea of using an abandoned slate quarry at Wind Gap, 14 miles north of Easton Pa., for the trial of underground storage of fuel oil. It has agreed to buy the Alpha Quarry of the Colonial Slate Co., 270 ft. deep, 350 ft. wide, 250 ft. long. Conversion of the quarry is a million-dollar job, should be completed before the end of the year. When it is, it will store about 1 million gal. of oil.

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(Classified Advertising)  
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| St. Louis 8               | 8615 Olive St., Continental Bldg., Lucas 4867   |

## PRODUCTION . . . . .

### Sharing a Bond

They came from miles around to visit Washington (D.C.) last week. "They" happened to be members of the American Institute of Chemical Engineers. Their purpose: to exchange ideas on methods of making better products—cheaper. The occasion: the national meeting of the A.I. Ch. E.

And despite the diversification of the products in which they were interested, engineers attending the show found, as usual, they had a common bond in the unit operations employed to produce them. It was the unique combinations of unit operations discussed that, for the most part, attracted the most attention.

From one aspect or another, at the formal discussions or in private conversations, just about every process used in the chemical industry was discussed. It was, at such a meeting, impossible to pick standouts. Here, however, are a few of the highpoints of views exchanged:

- Synthetic mica production on a large scale will commence soon, said R. A. Humphreys of the Mycalex Corp. of America (Clifton, N.J.).

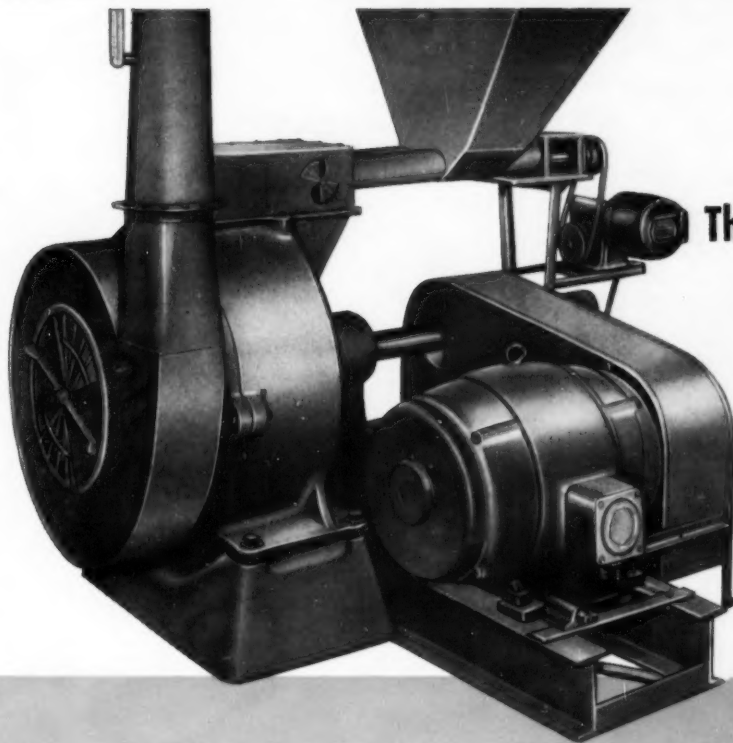
- R. L. Powell of Titanium Metals Corp. of America outlined some applications of titanium, spotlighted some of the problems confronted in producing it on a big scale. Ethyl Corp.'s Marshall Sittig gave his views on how metallic sodium might help solve some of these problems.

- Whitaker Cable's V. H. Ryan and Chemical Construction's George Van Here explained how Chemico's metals techniques were being adapted to extract powdered copper from brass scrap.

- P. H. Royster unveiled information on a new process of salvaging the manganese used in the nation's blast furnaces. Royster, who is director of research for the government-sponsored Manaslag Corp., pointed out that steel mills consume 2 million tons/year of manganese ore. This yields a slag of 9.4 million tons that could be used to produce 500,000 tons of manganese. Royster described a four-step method of resmelting the slag, blowing air through the molten metal to get manganese, steel and phosphate fertilizer. The process, he said, is now going through test on a large scale.

Other highlights of the meeting included talks on atomic energy, tariffs and broad gauge unit operation problems. Between those and visits to the Capitol's sights, the engineers had a full schedule.





The new

*Superfine*

# SCHUTZ-O'NEILL PULVERIZER

backed by  
**60 YEARS**  
of experience

## AIR FORCE PULVERIZING—AIR CLASSIFICATION

Here is a proven, automatic and dustless method of pulverizing any grindable material to your desired fineness. For extremely fine grinding and uniform particle size distribution of product, the principle of centrifugal impact with air attrition utilized so efficiently by the Schutz-O'Neill "Superfine" Pulverizer has never been surpassed. The centrifugal force recirculates coarse particles within the mill for regrinding. The air classification carries the fine particles out of mill as uniform product of the desired particle size.

## ADAPTABLE TO THE COMPLETE RANGE OF PULVERIZING FROM COARSE TO ULTRA FINE

The ease of grinding and the versatility of the unit are two features not found in any other pulverizer on the market. With proper adjustments, this mill will produce particles from 40 mesh to low micron sizes under conditions that enable you to accurately control not only particle size but also the size distribution in the product. This can be done while maintaining grinding temperatures below 125-130°F. The mill is ordinarily set for fine powdering duty, but if a coarser product is desired, it can be readily obtained by proper adjustment in the grinding and classifying chambers.

## COMES APART IN 10 MINUTES,

### EASY TO CLEAN, ADJUST, REPAIR

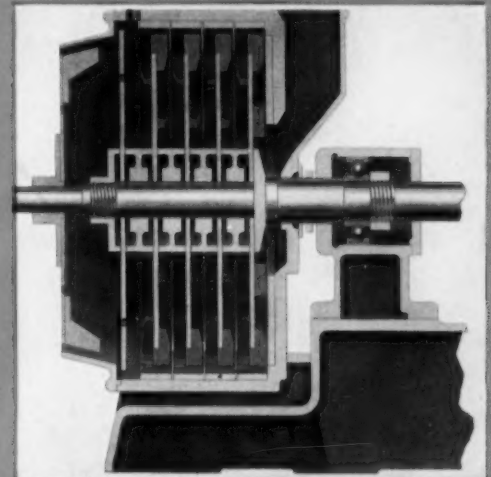
Ten minutes is all you need to take apart a Schutz-O'Neill "Superfine" for cleaning, to adjust for fineness, or replace any part. Remove 2 pins and cone housing lifts off. Loosen 1 set screw and 1 nut and all other parts slide right off the center shaft. It is unmatched for accessibility and simple, rugged design.

## LET SCHUTZ-O'NEILL GRIND A TEST SAMPLE FOR YOU

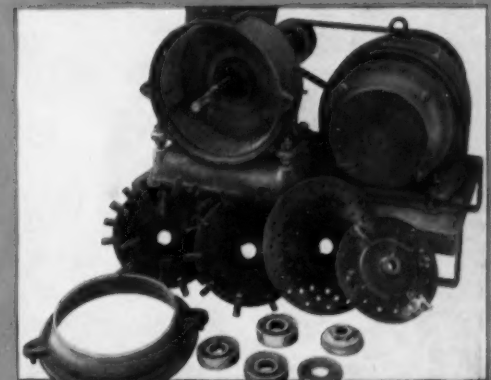
Send us a 50 lb. stock sample stating what your material is and fineness desired. You will receive your pulverized stock plus our engineering report giving complete details of process used together with recommended equipment, methods and mill plans.

WRITE US FOR THE NAME OF SCHUTZ-O'NEILL

SALES ENGINEER NEAREST YOU.



Cross section of the grinding chamber of our "Superfine" Pulverizer showing from left to right the cone plate, perforated mill plate and 4 beater plates with multi-section liner divided by annular rings.



Here is a disassembled mill. Every part separated and accessible—corrugated liners exposed for easy cleaning, exchange or replacement.

ESTABLISHED

1893

# SCHUTZ-O'NEILL COMPANY

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